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A TREATISE

ON

THE DISEASES AND PHYSICAL EDUCATION

OF

CHILDREN,

BY JOHN EBERLE, M.D.,

LATE PROFESSOR OF THE THEORY AND PRACTICE OF MEDICINE
IN TRANSYLVANIA UNIVERSITY, &C. &C. &C.

FOURTH EDITION,

LANE LIBRARY

WITH NOTES, AND LARGE ADDITIONS,

BY THOMAS D. MITCHELL, A.M., M.D.,

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PREFACE

TO

THE FOURTH EDITION.

I HAVE been requested to make such additions to the well-known work of the late Professor Eberle on the Diseases of Children, as would render it still more acceptable to the profession. The original treatise having been stereotyped, it was deemed unadvisable to interfere with the permanent arrangement of the volume, further than to fill the vacant spaces at the close of many of the items with suitable notes of a practical nature. These are marked with brackets.

The present volume is swollen beyond the dimensions of the last edition, by the introduction of many topics not treated of by Professor Eberle, every one of which is entitled to a place in a work on the diseases of the infant race. The additions thus made, offer to the profession a large variety of matter, that will, it is believed, prove acceptable and instructive. The sequel, bound with the original work, is also issued in a separate volume, for the accommodation of those who may be in possession of the last edition.

THOMAS D. MITCHELL.

PHILADELPHIA, July, 1850.

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BOOK I.

OF THE PROPHYLACTIC AND PHYSICAL MANAGEMENT OF CHILDREN.

CHAPTER I.

OF THE CONDUCT OF MOTHERS DURING PREGNANCY.

THAT the fœtus may be variously and injuriously affected, by causes acting through the medium of the maternal system; and that disease and constitutional infirmity are thus often produced during the uterine stage of life does not appear to admit of a doubt. From the moment, therefore, that conception has taken place, a new and most sacred duty devolves upon the female. She is bound by all the ties of maternal sentiment, of humanity and of moral and religious obligations to protect the nascent being in her womb, against every circumstance under her control, which may have an unfavourable influence on its delicate and uninured organization.

Though not in itself a state of disease, pregnancy is evidently attended, in the majority of instances, with a decidedly increased aptitude to morbific influences. Augmented sensibility and irritability of the nervous and sanguiferous systems, appears to be a natural concomitant of all great efforts of physical development in the animal organization. We observe it in dentition, and at the age of puberty, and it is, in general, equally strongly marked during the progress of those important developments which take place in the female system, from the commencement to the completion of gestation. When to this we add the remarkable tendency to general plethora, and the rise of the various powerful and pervading sympathies which occur during pregnancy, we have a combination of circumstances peculiarly calculated to increase the liability to disease and injury, from the influence of exciting and irritating causes.

Without doubt, many instances of pregnancy occur in which good health is enjoyed throughout its whole course, although little or no particular care is taken to avoid the usual sources of injury in such cases. Very frequently, however, the reverse obtains; and we daily witness much suffering and danger, both to the mother and child, from the influence of causes which, with proper care, might be avoided or rendered inoffensive.

The most serious, and perhaps, most common injurious consequence resulting from errors in this respect is *abortion*. Females are not, in general, sufficiently impressed with the great importance of attending to the precautionary measures, which reason and experience dictate, in relation to the prevention of this accident. They are apt to look upon abortion, as a temporary evil—an affair of a few hours, or at most of a few days suffering, and generally of no other serious consideration than that which may be due to the premature destruction of the embryo. This consideration might, indeed, be deemed a sufficient motive for the exercise of adequate care in this respect; but it may well be doubted, whether it often receives the regard which a proper sense of duty would dictate. In addition, however, to this appeal to the moral sentiment of the mother, there are other circumstances in relation to her own welfare, which when properly presented to her mind, seldom fail to excite a suitable attention to this important subject. Besides the very distressing circumstance that abortion, is in general peculiarly liable to recur, after having once taken place, we may mention the following as among the ordinary evil consequences of this accident—namely leucorrhœa, menorrhagia, dysmenorrhœa, prolapsus uteri; schirrus uteri, various nervous affections, especially chronic hysteria, dyspepsia, and general debility and ill-health. It is indeed a very rare occurrence to meet with a healthy female who has aborted more than once. Permanent injury to health is much more apt to result from abortion than from regular parturition. The benevolent author of nature has endowed every being with powers adequate under ordinary circumstances, to sustain the natural operations which it is destined to perform, without any particular evil consequences. The premature separation and expulsion of the fœtus, however, is an occurrence contrary to the design and regular course of nature and can not take place without more or less violence to the system and consequent disorder and infirmity.

But it is not simply with the view of obviating this accident, that the pregnant female is so deeply concerned in guarding against the operation of injurious causes. The future health and vigour of the child may be materially affected by the conduct of the mother in this respect. Organic debility and morbid predispositions may be thus produced, which, in their ultimate consequences, may prove more afflicting than abortion itself. It has indeed been supposed, that as there exists no direct or continuous communication between the fœtus and the mother, either by the blood vessels or the nerves, the former, probably, never participates to any serious extent, in the general diseases of the latter. It is observed that infants, well nourished, and apparently in good health, are occasionally born of mothers who had laboured under severe and irremediable disease during the whole period of gestasion. This is doubtless the case in many instances; but it should be observed that although the new-born infant may appear to enjoy a good state of health, it frequently happens that the disease or predisposition contracted during gestation, remains latent or dormant for months or even years after birth, before it is developed; and thus, there may be the appearance of a sound and healthful state of the constitution, during infancy, although the seeds of disease may be deeply deposited in the system. The want of a continuous vascular or nervous communication between the fœtus and the mother, can not be regarded as a sufficient ground for denying the possibility of the passage of disease from the maternal to the fœtal system. The fact that syphilis and small-pox, not to mention various other affections, have been contracted by the fœtus in utero, furnishes conclusive evidence of the occasional transmission of disease from the mother to the fœtus. In the higher grades of miasmal fever, particularly in yellow fever, miscarriage is by no means uncommon; and in many instances of this kind, the child is born dead, and often with evident marks of having died several days previous to its expulsion from the womb. It is nevertheless probable that the influence of maternal disease, or of injurious causes acting through the mother's system on the fœtus, when not sufficiently powerful to excite abortion, is generally confined to the production, rather of organic feebleness and predisposition to disease, than to any active state of morbid excitement or positive malady. Be this as it may, the liability of the child to injurious impresssions, during its uterine existence, is abundantly verified by observation; and experience and reason justify the conclusion, that the welfare of the fœtus, in relation both to its physical and moral conditions, is intimately connected with the health and regularity of the maternal system—and consequently, so far under the control of the mother, as she may have it in her power, to avoid the sources of disease and inordinate excitement.

I. *Of the dietetic regulations proper during pregnancy.*—The peculiar tendency to febrile irritation and general plethora, so apt to accompany pregnancy, renders it especially proper to avoid the sources of undue excitation and nourishment during this period. The sensibility of the stomach, too, almost always undergoes peculiar modifications; and the remarkable activity of its sympathies, more especially with the uterine system, attending most instances of pregnancy, presents us with an additional reason for the adoption of proper dietic regulations during the progress of gestation.

It is not to be inferred, indeed, that the pregnant female unless labouring under some disease, is to be dieted like a valetudinarian; but admitting a substantial and adequate diet, we are nevertheless warned by experience, to enjoin that moderation and simplicity of food, which would always be best, but which is now especially proper; and to caution against the free use of heating or particularly stimulating ingesta. As the appetite is frequently very craving in pregnancy, an inordinate indulgence in rich and high seasoned food is among the most common errors of females during this period. This error is the more apt to be committed, from the erroneous idea which many entertain, that, as the fœtus in utero draws its nourishment from the maternal system, a greater quantity of aliment is required in pregnancy than is necessary in the unimpregnated state. Dr. Dewees, in his work on the diseases of children, has placed the fallacy and injurious tendency of this opinion in a very strong light. The eight or ten pounds of animal substance which goes to the composition of the fully developed fœtus, being gradually drawn from the mother during a period of nine months, can not, surely, require any particular increase in the nourishment taken by the mother—more especially, "as almost every individual habitually takes more food, than is required for the regular support and health of the system."

The evils which are liable to result to pregnant females from errors in diet, are various and often exceedingly distressing. Where a predisposition to abortion exists, the free use of very nourishing and stimulating articles of diet, may give rise to this accident, simply by favouring the usually prevailing tendency to general plethora and fever. The occurrence of indigestion and gastric irritation, also, is particularly calculated to produce serious consequences in pregnancy. I have known several instances where the use of indigestible and irritating articles of food gave rise to the most alarming irritation of the stomach and bowels, attended with severe vomiting, and followed very speedily by abortion. In one case, a young married woman, in the fourth month of her first pregnancy, was seized with excruciating and obstinate dyspeptic colic, soon after she had eat freely of some very indigestible food. Notwithstanding the great risk and suffering which she had undergone from this attack, which she could not but refer to its true cause, and while her stomach was still weak and irritable, the strong cravings of her appetite led her, in about ten days after, to commit a similar, but still more glaring error. The consequence was, another violent attack of colic, followed immediately by inflammation of the bowels, which in the course of the second day terminated in abortion, and on the following day in the death of the patient.

The exercise of caution, in the selection of proper food for pregnant females, appears to be particularly important towards the termination of gestation. The occurrence of gastro-intestinal irritation and dyspeptic colic, at this period, besides its tendency to excite miscarriage, seems to be particularly favourable to the supervention of peritonitis, after the delivery of the child. There is another circumstance in relation to this subject, which appears to be well entitled to attention. There is a chronic form of intestinal irritation, which results from the impression of vitiated secretions, or unnatural and inordinately accumulated fœcal matter, and which, though not often manifested by any very conspicuous morbid effects during gestation, often exerts an alarming and fatal influence on the system, within a short period after parturition has taken place. A redundant, mixed, heterogenous, and not sufficiently digestible diet, is especially apt to lead to this condition of the bowels, where the digestive functions are not very vigorous, and the alvine evacuations insufficient. The consequences which are liable to result from intestinal irritations of this kind, are: great prostration; puerperal convulsions; alarming nervous affections; severe head-ache; pain in the lower part of the abdomen; inability to sleep; and a peculiar and highly dangerous affection, resembling puerperal fever, characterized by a remarkable sinking of the vital energies. That the liability to this very alarming form of puerperal disease, is greatly enhanced by errors in diet,—more especially by excess in the quantity of food taken, during the later stage of gestation admits of no doubt. I have witnessed several instances in which the correctness of this observation seemed to me very strikingly exemplified. A lady who had enjoyed unusually good health previous to her pregnancy, but who could not be restrained from indulging her appetite to an improper extent, became affected with severe and painful diarrhœa, about the middle of the last month of gestation. By the adoption of proper dietetic regulations, and the employment of suitable medicines, the disease subsided in the course of seven or eight days. A few days, however, before the termination of the pregnancy, she indulged to excess in eating plum-pie with a full proportion of strong cheese, "to help the stomach to digest" the farrago she had swallowed. Diarrhœa was re-excited; and in a few days after she was delivered of a healthy child. On the second day after parturition, she experienced a slight chill, followed speedily by symptoms simulating puerperal fever, attended with irresistible prostration and sinking of the vital energies, which terminated in death on the fourth day. These violent and dangerous effects of intestinal irritation are, fortunately, not very common; but there are many other affections of a discomforting, and often distressing character, which are rarely entirely escaped, by those who neglect a prudent attention to dietetic observances. Flatulency, acid eructations, pains in the stomach and bowels, cephalalgia, hysteria, diarrhœa, a feverish and restless state of the system, depression of spirits, palpitations, not to mention various other disturbing affections, are among the ordinary consequences of a habitual disregard of proper regulations, in relation to the diet. The pregnant female who observes a suitable regimen, will *cæteris paribus*, always enjoy more tranquility both of mind and body, and incur much less risk of injury to herself and child, than she, who giving a free rein to her appetite, indulges it to excess, or in the use of improper articles of food.

With regard to the particular dietetic regulations proper during pregnancy, it may be observed that *moderation* and *simplicity* in diet, are in general of more importance to the health and comfort of the female, than any very cautious selection as to the kind of food. This remark is more especially applicable to females enjoying a good state of health or who are free from any particular derangement of the digestive functions. A healthy female may, without risk of injury from this source, continue to take the same kind of nourishment during gestation, to which she was accustomed, and by which her health was maintained previous to the occurrence of pregnancy. Where the digestive powers are very active and there exists a decided tendency to plethora and febrile excitement, however, it will be proper to avoid the more stimulating and nutritious articles of food. In such cases, a diet consisting principally of the more digestible kinds of vegetable aliment should be selected, and all heating or strong stimulating drinks rigidly avoided.

In cases attended with a weak and irritable state of the stomach, a continued attention to the selection of suitable articles of nourishment is particularly important. In instances of this kind, the most distressing and alarming consequences are apt to result from errors committed in this respect. The necessity of enjoining uninterrupted attention to the choice of proper articles of food, when the digestive organs are in this condition, is the more urgent, from the circumstance that in cases of this kind, the appetite is frequently very craving and capricious, requiring a degree of resolution and forbearance which is seldom witnessed, until actual suffering gives efficiency to the counsels of prudence and experience. In general, such cases require the management proper in dyspepsia. Mild, unirritating, digestible and adequately nourishing food, must be selected. Rice, barley, arrow-root, oat-meal, milk, the lean parts of mutton, lamb, venison, tender beef, soft-boiled eggs, stewed apples and peaches, constitute appropriate articles of nourishment in such cases. It should be observed, moreover, that moderation in eating, as well as simplicity in the variety of the articles of food, are indispensible to the comfort and health of the patient under these circumstances. It matters not how suitable the diet may be as to its character; much, if not all the advantage which might result from it, under a temperate use, will be prevented, if it be taken in larger portions than the stomach is capable of digesting. Coffee and tea, when not made very strong, seldom give rise to any obvious inconvenience or disorder, and may in general, be used with perfect propriety during the period of gestation, by females enjoying an ordinary state of health. In subjects of a decidedly nervous temperament, however, or in such as are labouring under a morbidly irritable state of the nervous system, the use of strong coffee, and more especially of strong green tea, should be interdicted as a habitual beverage at meals. In such cases, black tea or well prepared chocolate, may in general be taken with entire safety. Milk, more or less diluted with water, is also an excellent drink in habits of this kind. With regard to vinous or alcoholic drinks, it is scarcely possible to reprobate their habitual use, in terms of censure sufficiently strong. Excepting as mere medicinal agents, regularly prescribed, they ought to be wholly and most rigidly avoided by pregnant females. The temptation, as Dr. Dewees very truly observes, to taking small portions of cordial or brandy, in the early months of gestation, is often very strong. The annoying sensations frequently experienced in the stomach, and the general uncomfortable feeling connected with them, are, usually, allayed or moderated for a time, by the use of these potent stimuli. The unpleasant feelings, however, return, and recourse is again had to the assuaging but insidious stimulus; and thus it is taken again and again, in still increasing portions, until the deplorable habit of solitary dram-drinking is formed, and the health, happiness, and character, of, perhaps, an otherwise amiable and excellent being, immolated to the filthy and devastating demon of inebriety. The frequent or habitual use of spirituous drinks, is particularly apt to favour the occurrence of abortion. In the course of my practice I have met with some very striking exemplifications of this fact. A lady, who, after the birth of her first child, became deeply imbued with this lamentable vice, aborted four times in succession. She then, by the earnest and unremitting exertions of her friends, seconded by her own efforts, succeeded in throwing off the habit of intemperance, and in the course of the following ten years gave birth to four children. These children, however, were remarkably feeble and sickly from their birth, and one only, out of the four, is now living—about six years of age, and manifestly of a very delicate and infirm constitution. Examples of the very ruinous effects of habitual intoxication on the health and life of the fœtus in utero, are unfortunately, but too common. The majority of children born of decidedly intemperate mothers, are weak and sickly, and but few of them arrive at the age of adolescence. Many females appear to think, that although these and other melancholy consequences, follow in the train of habitual intemperance, it is extremely improbable that any injury can result to themselves or the fœtus, from the occasional use of small portions of spirituous liquors. Were it indeed absolutely certain, that the use of such potations, would always be restricted to occasional small portions, the indulgence would perhaps, rarely occasion any serious consequences. But as no prudence and resolution can be safely regarded as an entire protection against the gradual formation of the habit of intemperance, where such drinks are occasionally taken during gestation, even though it be at very considerable intervals and in very moderate quantities at first, it is far the safest plan, to abstain wholly from every kind of spirituous liquors. The propriety of total abstinence, is the more obvious, from the undeniable fact, that whatever temporary melioration of the feelings which may, at times, result from the use of spirituous drinks, they very frequently contribute, ultimately; to increase the infirmity or mischief for which they were taken.

Before leaving this part of the present subject, it will be proper to make a few remarks upon that remarkable irregularity of the appetite, or "*longing*," as it is called, which many females experience during pregnancy. The appetitive sensibilities of the stomach undergo so much derangement in some instances, that articles of food, which previous to the occurrence of pregnancy were very grateful and congenial, become highly disagreeable, and an almost irresistible craving for unnatural and even disgusting substances is experienced. In general, this aberration of the appetite. is more apt to occur in weak and delicate females of a nervous temperament, than in such as are of a robust and full habit of body. Different opinions have been expressed with regard to the probable influence, which entirer resistance to these vehement longings or disppointment in satisfying them, may have on the mother and fœtus. It is not unreasonable to presume, that the strong mental affection which may be caused by disappointment in this respect, may exert an unfavourable influence on the health of the mother and child, more especially in very nervous and excitable females. Disappointment, and its consequent moral affection, from this source, however, has nothing peculiar in its influence, and can be no more injurious in its reaction on the system than an equally strong emotion of the mind, from any other source of disappointment or frustrated desire.

If the substances longed for be not evidently of an injurious character, they should not be withheld. The mind is always more or less tranquilized by gratification, and, unless the indulgence be carried to an immoderate extent, it will very rarely occasion any particular disturbance. It is very remarkable, indeed, that even unwholesome articles, seldom give rise to any particular inconvenience or disturbance in the system, where there is a very urgent and persisting desire experienced for them. Still it would not be prudent to trust too much to this power of the stomach to resist the injurious impressions of the substances it calls for; and whenever the appetite is thus directed upon articles of an offensive or hurtful nature, means should be used to divert it and determine it to more suitable alimentary substances. In some instances, these "longings" must be regarded as instinctive calls of the stomach, favourable to the health of the individual. If they are not gratified, langour, inquietude and other symptoms of deranged health, will be very apt to supervene. Thus when a strong desire for eating chalk, charcoal, clay, &c. is manifested, we are admonished that the digestive powers are feeble, and that there exists a prevailing tendency to acidity in the stomach. In such cases, the appropriate means of relief are alkalines, mild laxatives, and tonic vegetable bitters, with a suitable regimen. Magnesia in combination with some vegetable bitter, or the bi-carbonate of potash with small portions of aloes, or rhubarb, so as to procure one or two free alvine evacuations daily, seldom fail to procure some advantage. If the tongue is bitter and clammy, small doses of blue-pill, with an occasional mild purgative, and moderate portions of sulphuric or nitric acid, three or four times during the day, will tend to bring the stomach back from its aberrations, to a more healthy tone of feeling. It is not common, however, to find these irregular determinations of the appetite so strong or so decidedly injurious in their tendency, as to require any particular medical attention; and we rarely meet with instances which may not be moderately indulged, without injury or inconvenience to the system.

II. *Of the proper regulations in relation to dress and exercise.*—This is a most important subject of attention to females during the period of gestation. Some of the prevailing customs in relation to dress, are so obviously improper during pregnancy, that it would seem very strange that there should be any difficulty in procuring their temporary rejection by females in this condition, did we not know that the imperious commands of fashion are often more sedulously obeyed, than the dictates of humanity and of self preservation. The custom of wearing tightly laced corsets during gestation, can not be too severely censured. It must be evident to the plainest understanding, that serious injury to the health, both of the mother and child, must often result from a continual and forcible compression of the abdomen, whilst nature is at work in gradually enlarging it, for the accommodation and development of the fœtus. By this unnatural practice the circulation of the blood throughout the abdomen is impeded—a circumstance, which together with the mechanical compression of the abdominal organs, is peculiarly calculated to give rise to functional disorder of the stomach and liver, as well as to hæmorrhoids, uterine hæmorrhage and abortion. The regular nourishment of the fœtus, also, is generally impeded in this way,—a fact which is frequently verified in the remarkably delicate and emaciated condition of infants, born of mothers who have practised this fashionable folly during gestation. It may be observed, that since the custom of wearing tightly laced corsets has become general among females, certain forms of uterine disease are much more frequent than they were, previous to the re-introduction of this fashion. My experience has satisfied me, that leucorrhœa and prolapsus uteri, are vastly more common at the present day, among *unmarried* females, than they were sixteen or eighteen years ago. It is indeed astonishing, that these disorders are not more frequent even than they appear to be; for we can not conceive of any cause more directly calculated to produce them, than the prevailing practice of pressing the abdominal viscera down upon the womb, and thus forcing it out of its natural position, into the lower part of the pelvis, where the irritation it causes, gives rise to leucorrhæal discharge. Struve observes, in relation to the injurious tendency of wearing corsets during gestation, "that the parts which have suffered from constant pressure, become debilitated and incapable of co-operating in the important function of parturition; so that the passage of the child is endangered, the labour rendered more tedious and painful, and all the operations of nature retarded." The pressure of corsets, moreover, must tend to debilitate both the mother and infant, by impeding the function of respiration, and preventing in some degree, the regular decarbonization of the blood. Struve cautions pregnant females against an error, which is not likely to be committed in the present mode of dressing—namely, "to avoid wearing a number of *heavy petticoats*, by which the abdomen may be depressed, and a bad position of the fœtus produced. At the present day, it is much more necessary to caution against the opposite impropriety, of using insufficient clothing to protect the body from the injurious influence of cold and atmospheric vicissitudes. The abdomen and feet especially, should be guarded against injury from these causes. In the winter or cold and damp seasons, the use of a broad flannel or bandage or roller round the abdomen, is very useful in this respect, and may be beneficial moreover, by the uniform support which it affords to the abdomen and its consequent tendency to obviate any unfavourable obliquities in the position of the womb, in the advanced periods of gestation.

The exercise which it may be proper to use during pregnancy, must of course, vary according to the period of gestation, and the particular condition of the female in relation to constitutional vigour, predisposition to abortion, and other affections, previous habit, and temperament. All kinds of "agitating exercise, such as riding in carriages with rapidity over rough roads, dancing, lifting, or carrying heavy loads, in short, all masculine and fatiguing employments whatever," ought to be avoided by pregnant women. The propriety of avoiding agitating and fatiguing exercise, increases in proportion as gestation approaches the term of its regular completion. During the eighth or ninth month of pregnancy, unusual corporeal exertion or fatigue, is particularly apt to excite premature labour; and where this accident has once taken place the necessity of observing proper caution in this respect, in subsequent pregnancies, is peculiarly urgent. In all instances, where a predisposition exists to abortion at any particular period, it is scarcely possible to prevent its occurrence, unless the utmost degree of care is taken, to avoid exciting or fatiguing exercise, about the time when this accident is apt to take place.

In weak, excitable, and nervous females, and in such as are of an unusually plethoric and irritable habit of body, it is particularly proper to observe suitable precautions, in relation to exercise and corporeal exertion. It is to be observed, however, that if injury is apt to result from *too much* exercise and agitation of the body, there is reason also for apprehending injurious consequences from too much indolence and inactivity. Moderate and gentle exercise is generally decidedly salutary during gestation, and should not be neglected unless some particular reason exists for maintaining a state of rest and bodily composure. Riding, in an easy carriage, on even roads, or moderate walking, may be enjoyed with great propriety, and usually with obvious advantage during gestation.

III. *Of moral influences.*—Tranquility and cheerfulness of mind are always highly favourable to the health and regular operations of the animal economy. In pregnancy, the importance of a calm and even temper is especially great; for the re-action of mental agitation or depression, is capable of producing very unfortunate impressions, both upon the mother and fœtus. Violent anger, terror, or jealousy seldom fail to produce unpleasant effects during pregnancy; and the consequences are, sometimes, very alarming, and even fatal. Convulsions, severe paroxysms of hysteria, spasms, syncope, insensibility, hæmorrhage, and abortion, may be produced by moral influences of this kind. Not more than ten months ago, I witnessed the occurrence of hysteric convulsions followed, in the course of a few hours by abortion, in consequence of a fit of vehement rage from jealousy. But even when none of these violent affections result from the more agitating emotions, there are various minor evils of a discomforting and distressing character, which are apt to occur during pregnancy from moral influences of this nature. The functions of the stomach, the heart, the liver, and of the brain itself, are strongly influenced by the mind. The depressing moral affections often exert a highly injurious influence on the organization, particularly on the digestive and biliary organs. Debility, indigestion, jaundice, emaciation, with various other functional disorders, and even organic affections, are frequently produced by emotions of this kind; more especially by intense and protracted grief, and mental distress. Unfortunately no effort of the will, or firmness, is always adequate to avoid these distressing affections of the mind. The accidents and misfortunes to which all are liable, sometimes bring grief, and sorrow, and distress, with a force which cannot be sufficiently resisted. There are, however, other causes of mental disturbance, which are more under the control of well constituted minds; and which are almost as detrimental to the welfare of both the mother and child, as the moral affections just referred to. Fretfulness and moroseness of temper; envious and jealous feelings, peevishness, hatred, discontent, obstinacy and perverseness of disposition, are under the subjection of reason and a sense of propriety. It is of great importance to the regular progress of gestation and to the well-being of the mother and fœtus, that every effort which good sense and moral feeling dictate, should be steadfastly made by pregnant females, to keep down these injurious and degrading sentiments and irregularities of temper.

The *maternal imagination* has been accused of producing the most extraordinary effects on the fœtus in utero. During the early and middle ages, it was almost universally believed, that malformations, moles, and other unnatural appearances, were very generally produced by the influence of the imagination of mothers; and the opinion continued to prevail with many reflecting and well informed physicians, until within a comparatively late period. A multitude of pretended examples of this kind, are on record—many of which are of a character so strikingly preposterous and impossible, that they can now be regarded only as extraordinary and humiliating instances of human credulity. We are told, that black children have been born of white parents, in consequence of the maternal imagination having been excited by contemplating the portrait of an Ethiopan, and the same effect has been produced, according to some statements, in consequence of pregnant females having contemplated with interest the portrait of an Ethiopian, or having been frightened by a black man. Damascenes assures us, that he saw an infant born with the whole of its body covered thickly with coarse black hair, caused, as he states, by the mother having frequently looked at an image of St. John dressed in a bear's skin. A child was born at Blois in France, with the iris of one of its eyes accurately representing the dial-plate of a watch, in consequence of the mother having experienced a very strong desire to have a watch, which from some cause or other could not be gratified.

Absurdities of this gross and glaring character are now but little entertained even by the most superstitious and ignorant. There are still, however, some, who fancy that under strong excitement the imagination is capable of producing indelible impressions on the body of the fœtus in utero. It is not very uncommon, to hear moles, marks, and various other blemishes and malformations ascribed to mental influence. Apprehensions of this kind, sometimes seize on the minds of females, with irresistible force; and they often occasion great anxiety and unhappiness during gestation. With weak, ignorant and superstitious females, every unexpected occurrence, that happens to strike them with sudden alarm, or produces any particular excitement of the imagination, is apt to impress them with alarming apprehensions, as to the effects it may have on the development and conformation of the child in the womb. These distressing illusions are generally much increased by the many ridiculous stories of moles and malformations, occasioned in this way, which seldom fail to reach the ears of those who are predisposed to listen to them; for nurses, and gossiping old women, are usually furnished with an ample stock of extraordinary examples of this kind. The evidences upon which such tales are generally founded are never wanting. If a child is born with some blemish on its body, the mother is forthwith closely questioned as to the circumstances which may have attracted her particular attention or excited her mind by sudden surprise or alarm. If any thing of this kind is recollected which bears even a remote similitude, in colour, shape, or otherwise, to the mark or defect observed on the child, it is immediately put down as its indubitable cause. Sustained by authorities of this kind, these absurd apprehensions often acquire an ascendency over the minds of pregnant females, which no expostulation or ridicule can entirely subdue, and which sometimes give rise to the utmost degree of anxiety and distress of mind, and occasionally even to physical suffering and ill-health.

I do not propose to enter into a formal refutation of this erroneous and injurious notion. It is now unreservedly rejected as the fantastic offspring of ignorance and superstition, by all sensible, observant, and reflecting physicians; and it is much to be desired that it should be equally repudiated, by those whom it more especially concerns, and upon whose happiness and well-being, it tends to exercise so injurious an influence.

But, although the idea that structural blemishes may be produced by the influence of the mother's imagination, is wholly without foundation, yet it can scarcely be doubted that injurious impressions may be made, in an indirect manner, on the child in the womb, by affections of the maternal imagination. If intense and protracted grief, or violent bursts of passion may exert a detrimental influence on the fœtus, we may presume that similar injurious effects may result from strong affections of the imagination. It is well known that disease and even death is sometimes produced by intense excitement and concentration of this mental faculty; and it is equally notorious that severe and long-standing maladies are often effectually removed by its powerful agency. It is evident, therefore, that the fœtus in utero must be liable to injurious impressions from inordinate affections of the maternal imagination; for without presuming that the mental affections of the mother can exert any direct and immediate impressions on the system of the fœtus, the diseases and functional disturbances to which the mother is liable from influences of this kind, must tend, in some degree, to interfere with the regular nourishment and health of the child. Every kind of mental excitement, when excessive, may prove detrimental to the health, both of the mother and the fœtus; and it is probably as important, to guard against the ascendency of an excited imagination, as against the various agitating and depressing emotions already mentioned.

IV. *Of blood-letting during pregnancy.*—Females very generally suppose that the condition of pregnancy is, of itself, a sufficient reason for blood-letting; and that, although unaccompanied by any circumstances, which might be justly deemed an indication, for this evacuation, it is necessary, both for the preservation of the mother's health, and the safe progress and termination of gestation. This is a very erroneous opinion, and often leads to decidedly prejudicial consequences. Pregnancy is, indeed, generally attended with a very peculiar tendency to plethora and febrile excitement; and, it may be admitted, that even in a state of apparent good health, blood may often be drawn during pregnancy with a beneficial result. In such cases however, the pulse and other manifestations of general plethora, indicate the propriety of depletion; and unless these or some other symptoms calling for the abstraction of blood be present, it cannot be practised without the risk of unfavourable consequences. When the symptoms of vascular repletion are not very urgent, the plethora may, in general, be much more beneficially removed, by using a less nutritious and stimulating diet, than by blood-letting. By the former mode, we not only diminish the mass of the blood, but we generally also improve the condition of the alimentary canal, and thereby contribute sensibly to the comfort and health of the patient. In weak, nervous, and relaxed habits, even where the manifestations of vascular fulness are conspicuous, the loss of blood, sometimes, occasions much debility, and may even contribute to the occurrence of abortion.

Pregnant females should not resort to blood-letting, unless manifest indications exist for its employment; and, as they cannot be competent judges themselves, of the presence or absence of such indications, the advice of a physician ought always be procured before recourse is had to this measure. To bleed merely because pregnancy exists, is a practice which is sanctioned neither by reason nor experience, and ought to be discarded as a custom calculated to do mischief in some cases at least, whilst it cannot do any good, unless called for by other circumstances than the condition merely of pregnancy.

A very severe and troublesome pain is often experienced in the right hypochondrium during the latter period of pregnancy; and this suffering is, almost always, sought to be mitigated or removed by blood-letting. When decided evidences of plethora accompany this painful affection, bleeding will occasionally procure considerable temporary relief; but in the majority of instances, no mitigation whatever is obtained from this measure. The relief which is sometimes procured by bleeding, is always of short duration, the pain usually returning in the course of two or three days; and if the bleeding is thus frequently repeated, as is sometimes done, much mischief is apt to be produced, by the general debility and languor which it tends to occasion. When the symptoms of vascular turgescence throughout the system are conspicuous in connection with this pain in the side, it will certainly be proper to diminish the mass of the circulating fluid by *vene-section;* but where no indications of this kind are present, blood ought not to be abstracted merely on account of this affection; for it will most assuredly fail of procuring the desired relief; and may, when not particularly called for, operate unfavourably on the general health of the patient. Moderation in diet, together with a proper attention to the state of the bowels, and the use of gentle exercise by walking, will, in general, do much more towards the removal of this source of uneasiness and suffering, than will result from blood-letting, where this evacuation is not especially indicated by the fulness and firmness of the pulse, or by other manifestations of general vascular plethora.

The breasts and nipples should be particularly attended to during the latter months of gestation, in order to prepare them for the important function of suckling the infant. To prevent the nipples from becoming excoriated and inflamed, in consequence of the irritation occasioned by the child's lips and tongue, in the act of sucking, means should be used, some weeks before the expected termination of gestation, to render them firm and to diminish their sensibility to irritating impressions. For this purpose the nipples should be daily washed with luke warm water, then dried by exposing them to the free air, and afterwards gently rubbed for five or six minutes with a soft piece of flannel or with the extremities of the fingers. Much benefit may also be obtained, from the occasional application of a pup to the breasts during the last four or five weeks of gestation. Washing the nipples with brandy and water, and with various stimulating lotions is a very common practice; and where the skin of the nipples is very delicate and sensible, considerable benefit may, at times, be derived from such applications. Dr. Dewees, however, is decidedly opposed to the use of astringent washes, for the purpose of preparing the nipples. My own experience, does not lead me to apprehend any detriment from certain applications of this kind; on the contrary, I have been constantly in the habit of directing the use of a wash, composed of two drachms of the tincture of myrhh diluted with two ounces of water, with a drachm of laudanum; and in general the effects have been manifestly advantageous. The nipples should first be bathed in luke warm water, so as to soften and separate the indurated cuticle, then dried, and gently rubbed with soft flannel, as has just been stated, and afterwards washed with the lotion just mentioned. If this course is pursued daily, for several weeks previous to the birth of the child, it will, in general, obviate all difficulties in this respect. Compression of the breasts by corsets, tight jackets, and stays, during pregnancy, is calculated to interfere very materially with the function of lactation. The almost constant pressure which is thus made on the nipples, forces them inwards, and frequently buries them in the yielding substance of the breasts, so as to render suckling very difficult, and often wholly impracticable. The full and regular development of the mammary glands too, is doubtless much impeded by the pressure which they suffer in this way. It is well known that compression is a very powerful means for promoting absorption; and surgeons often avail themselves of this measure, for reducing glandular and other enlargements on the external parts of the body. We could indeed scarcely adopt more effectual means for restraining the natural growth and development of the breasts than tightly laced jackets, stays, and corsets; and it is, doubtless, to this circumstance that we must ascribe the flat and unfeminine breasts which are so common among the young females of the present day. I have been frequently struck with the fact, that in the country, and among the lower classes of females, who do not compress their chests, by corsets, &c. we generally find a much greater proportion of full and well developed bosoms than in cities and among fashionable ladies.

When the nipples are very small or have been forced inwards by the pressure of corsets, &c., they should be drawn out by means of a suction pump, or with a tobacco pipe, and all undue compression of the breasts carefully avoided. One of the white earthen tobacco pipes, with a large bowl will in general answer this purpose very well. The effort of drawing the nipples out, should be repeated several times daily, until they have acquired a degree of prominency which will enable the child to lay hold of them without difficulty.

CHAPTER II.

OF THE MANAGEMENT OF NEW-BORN INFANTS.

The proper management and nursing of the infant during the first few weeks after its birth, has a most important influence on its future well-being. Previous to its entrance into independent life, the child enjoys a tranquil state of vegetative existence, removed from the multifarious influences of external causes, with but a narrow circle of organic actions to perform, and its sensorial functions in a state of total inactivity. How great the change which takes place at birth! In a moment, a multitude of new and highly important relations, are established between its tender and uninured organization, and the countless objects of external nature. Functions and operations which, up to this period, lay passive and dormant, are now suddenly called into action; and the whole machinery of its system, starts forth in the performances of the harmonious series of vital actions. The air for the first time, comes in contact with its body—it rushes into the cells of the lungs, and respiration is established; the current of the circulation finds new channels, and abandons those which were previously the principal conduits of the vital fluid. The senses are awakened, light strikes the eyes, sound the ears, and its taste is delighted with the simple nourishment, formed for it, in the maternal bosom; the sense of touch is acute, it feels the variations of temperature, and is keenly susceptible of pain from injurious impressions, and gratification from soothing and agreeable influences. The stomach begins to exercise its instinctive calls for nourishment; urine is secreted, the bowels begin to act, and to eliminate their fœcal contents, and the various secretions subservient to digestion are established. When we contemplate this remarkable transition of a most helpless and feeble being, from a state of repose and almost total exemption from external impressions, to a mode of existence which subjects its tender and uninured organization to the ceaseless influence of a vast multitude of varying agencies, it would seem truly surprizing, that the new-born infant could prolong its existence, even for a few hours, did we not know that the benovolent author of nature, has endowed every being, with powers adequate, under ordinary circumstances, to sustain the changes and modifications which it is destined to undergo in the progress of its development from the nascent point, to the full state of adult life. It is evident, however, that this power of accommodation can afford no protection against the numberless accidental and unnatural impressions which the new-born infant is liable to suffer; on the contrary, there is no period of life, in which there exists so great a susceptibility to injurious influences, as during the early stages of infancy. Apparently slight errors during the first few weeks after birth, often lay the foundation of permanent constitutional infirmity; and much suffering or early death, is but too common a consequence of improper management in relation particularly to the diet, dress, and exposure of the new-born infant.

I. *Of the washing and dressing of the new-born infant.*—When the infant is born, and the function of breathing is well established, it must be carefully separated from the mother and secundines, wrapped up in a piece of soft flannel and handed to the nurse. If the child breathes feebly and imperfectly, or exhibits other signs of great feebleness it should not be washed immediately, but suffered to remain as quiet and undisturbed as possible, until the vital actions have assumed some degree of activity. When on the contrary it manifests an active state of the vital powers, the washing should be performed as soon as convenient after its separation from the mother. It is of importance that this duty should be carefully and thoroughly executed. The white caseous substance which is deposited on the surface of the fœtus, during its sojourn in the womb, adheres very closely to the skin; and as it is wholly insoluble in water, and but very slightly acted on by soap, it can never be sufficiently removed, unless some other substance is employed which has the property of rendering it soluble. For this purpose, lard, or fresh butter, or the yolk of eggs may be used. Before any water is applied to the child's body, the skin should be smeared and gently rubbed with one of these substances; after which the whole may be readily washed off with warm water and soap. Dr. Dewees advises that the *finest* soap should be selected, for the stronger soaps, particularly "the brown and stimulating soap, called *resin soap*," is apt to irritate and inflame the tender skin of the infant, and to give rise to painful and protracted abrasions of the cuticle. When the yolk of eggs is used for this purpose, soap is altogether unnecessary, simple warm water being sufficient to cleanse the surface thoroughly. It has been much disputed whether warm or cold water is most proper for the first ablutions of the infant. Under an impression that the use of cold water is calculated to invigorate the infant, and to inure it early to vicissitudes of atmospheric temperature, and thus to obviate, to a degree, the liability to disease from this source, many physicians have strenuously insisted on the superiority of cold over warm water for this purpose. Although there may appear to be some justice in these views, yet general experience is at present decidedly in favour of the employment of warm water for washing infants; and a correct view of the circumstances connected with this subject, gives it also, the decisive sanction of reason and common sense. The infant having never experienced but one uniform degree of temperature, during the whole period of its uterine existence, cannot but receive a painful and often injurious shock when suddenly subjected to the application of cold water; and it cannot be doubted, that the immediate exposure of new-born children to cold air or water is frequently productive of serious maladies. Were an adult confined for nine months to an invariable temparature of 98°, and then suddenly ushered into a medium of the temperature of 60°, is it not extremely probable that it would prove highly detrimental to his health? The occurrence of disease from much less remarkable vicissitudes than the one just supposed, is a matter of almost daily experience. How then can it be reasonably contended that the delicate, feeble, and uninured organization of the new-born babe, should be capable of bearing such a transition without experiencing any injurious impressions. Indeed, the struggles, the pale and contracted skin, the shrieks, and the trembling which we often witness when the infant is plunged or washed in cold water, afford sufficient evidence that painful, and we may presume, injurious impressions are made on its system. The propriety of using warm water is particularly urgent when the infant is feeble. Doubtless, with robust and vigorous infants, a salutary reaction often speedily takes place, under the depressing influence of cold ablutions, but where the vital energies are feeble, the reaction may fail, and a degree of depression be produced, which may place the life of the infant in imminent danger. Instead of abstracting heat, we find it much more congenial to the infanticile system to impart a moderate degree of warmth from without; and with very delicate and feeble infants the constant application of a comfortable degree of warmth is particularly important. The water used for washing healthy and vigorous infants should be *luke-warm;* but for such as are weak, water of a higher temperature will be proper, and in cases of extreme feebleness, a small portion of wine may be advantageously added to the water. To remove the unctuous matter already mentioned, a fine and soft cotton or flannel rag should be used for washing. This peculiar substance is in general, most abundant in the folds of the joints, particularly in the groins, and armpits; and it is particularly important to the health and comfort of the child, that every particle of it should be removed from these and other parts of its body. It is sometimes impracticable to remove the whole of this matter from the folds of the skin and joints at the first washing, without causing too much irritation by the rubbing, which it is necessary to use to detach it entirely from the skin. When this is the case, the portion that remains may be removed at the second washing.

Many are in the habit of bathing the head of the new-born infant, with brandy or some other spirituous liquor, in order as is imagined, to invigorate its system and fortify it against the injurious effects of cold and other causes of disease. This practice can serve no useful purpose; and as it may do mischief by over-exciting the system as well as by causing pain and inflammation of the eyes, it ought to be abandoned. When the infant is very feeble and languid, a small portion of some stimulating liquor may be added to the water in which it is washed; but unless such a special reason for stimulating applications be present, plain water is decidedly the most proper. After the child has been thoroughly washed, it should be well dried, and immediately dressed. Throughout the whole period of infancy the utmost attention should be paid to keeping the child's body in a state of perfect cleanliness. The ablutions should be performed every morning and evening, though in the evening, the lower half of the body only need be washed. It is also a matter of very great consequence to the comfort and health of the infant to keep every part of its body dry. This is particularly important with those parts which are subject to friction, from being in contact with each other, as the nates, the armpits, groin, folds of the neck, &c. Excoriations and painful inflammations are apt to occur in these situations, when they are suffered to remain wet or moist. The common practice of dusting fine starch or hair-powder over the body, with the view of keeping the skin dry and soft, is improper. and ought not to be adopted. It interferes with the regular transpiration of the skin, and has a tendency to give rise to a troublesome itching and harshness of the cuticle. On the appearance, however, of slight excoriations, a little hair-powder, or prepared tuttia may be dusted on the parts with benefit; but it cannot be used with advantage as a preventive of such affections.

II. *Of the dress of the child.*—The first thing to be done in dressing the infant, is to fix the remains of the navel string by surrounding it with a piece of soft dry rag, and supporting it in a proper position, by means of a roller or bandage, passed round the child's body. A simple strip of flannel, about four inches wide, is the best material for this purpose. Particular care must be taken not to draw this bandage too tight round the abdomen. It should be sufficiently loose to admit of the easy introduction of a finger under it. If it embraces the body too closely, it occasions uneasiness, pain, and difficulty of breathing, by impeding the co-operation of the abdominal muscles, and the free descent of the diaphragm; at the same time that it tends, very strongly, to favour the occurrence of umbilical, and particularly scrotal hernia in male infants, by its necessary effect of compressing the abdominal cavity, which, with the forcible descent of the diaphragm in the act of crying, coughing, and straining, presses the viscera down, and forces them through the natural openings into the abdominal parietes. I have repeatedly known inguinal rupture produced in this way. The bandage should be worn four or five months before it is laid aside; and where the parts about the navel appear to be weak and ready to yield to the pressure of the viscera, it will be proper to continue the use of the bandage a much longer period. Previous to the separation of the remaining piece of navel-string, care must be taken not to pull it; and the parts about the navel should be kept as dry and clean as possible. A neglect in these particulars, is apt to give rise to painful inflammation and excoriation of the umbilicus. "Sometimes the vessels of the umbilical cord, which before were distended with blood, will collapse, the bandage become loose, and the life of the babe be endangered by excessive bleeding; the state of the bandage must therefore, from time to time, be carefully examined."

With regard to the *clothing* of infants, it may be observed, in a general way, that it should be warm, light, and loose. It is scarcely necessary, to say any thing, in reprobation of the old, absurd, and injurious practice of swaddling infants. This cruel custom is now universally abandoned by every civilized people; and it is surprising that the common sense and humanity of mankind, should have ever permitted its introduction. To confine and restrain every member and almost every muscle of the body in this manner, during the fragile state of infancy, must be as detrimental to the health and regular developement of the child, as it is cruel and barbarous.

The clothing of infants should be managed in such a way, as to protect them against the effects of too high or low a temperature, and against sudden alterations of the air and weather. In the winter, or during cool seasons, flannel forms an essential part of the clothing. The lightest and softest kinds of flannel should be selected. In new-born infants of a feeble and languid habit, the use of flannel next the skin, is particularly useful. During the first few months after birth, warmth is always peculiarly congenial to the infantile system; and where from feebleness, the developement of the animal temperature is not very rapid, it is particularly necessary to use flannel clothing, so as to favour the accumulation of warmth in the child's body. Besides the usefulness of flannel as a means for obviating the depressing and injurious effects of cold and atmospheric vicissitudes, benefit may also result from its gentle stimulating impressions on the surface of the body, by which the blood is solicited to the external capillaries and unfavourable congestions obviated in the internal organs. During the warm seasons, the flannel should be substituted by muslin; but the moment that any sudden reduction of the atmospheric temperature takes place, the use of the flannel should be resumed. Common sense indeed, dictates the propriety of constantly accommodating the clothing to the varying states of the weather, and when this obvious duty is not attended to, much disease and suffering is liable to occur, which under a more prudent management in this respect, would be prevented. In the summer season, infants are often exposed to unpleasant consequences from being too thickly and warmly covered while sleeping. The infant with its usual quantity of clothing, is often laid on a bed of feathers or down, into which its body sinks, and a thick cover thrown over it; from which it is generally taken up when it awakes, bathed in a copious perspiration and of course particularly predisposed to receive injury, should it happen to be immediately exposed to a current of fresh and cool air. There can be no doubt that catarrhal and bowel complaints are frequently produced in this way. I have known a case of fatal cynanche trachealis speedily excited by carrying a child, taken out of its cradle, in a state of free perspiration, into a draught of cool air. It is proper to observe, that the child should never be suffered to sleep in the flannel which has been worn during the day and in the morning it must again be changed.

During the first eight or nine months, the child's clothes should be long enough, to extend considerably beyond the feet, in order that the lower parts of the body may be duly protected, against the effects of cold and the variations of temperature. After this age, however, the feet should be entirely unincumbered by the clothing, so as to permit the free motion of the inferior extremities. During cold weather, fine woollen stockings, sufficiently wide to be easily put on and to prevent every degree of compression, should be worn; but in warm weather light and soft flannel socks will suffice. The shoes should be made of light and pliable materials, and sufficiently large to prevent all constraint of the feet. Some writers object to putting shoes on infants. It is alleged that they tend to cramp the feet and restrain their free motion, and that consequently the child "does not learn to walk so early, as when the feet are unincumbered by shoes." These objections, however, may be obviated, "by having the shoes made large and of the most pliant materials;" and I fully accord with Dr. Dewees in the opinion, "that as shoes afford protection from cold, and security against accident when the child is placed upon the floor, especially on carpeted floors, where pins, needles, and other sharp substances, are often concealed, they can not, with perfect propriety, be dispensed with." The use of shoes is decidedly proper when the child is carried out of doors during cold weather. In very young infants, thin woollen socks will protect the feet sufficiently during the warm seasons; but when they are about learning to walk, it is best, for the reason just quoted, to have the feet invested in shoes made of very soft and light materials.

It is highly important that the child should be kept as dry as possible. Wet diapers or stockings, when suffered to remain on the child for some time, are apt to give rise to bowel complaints and febrile affections, more especially during the cold seasons. They tend moreover very strongly to favour the occurrence of excoriations, and painful irritations of the skin about the groin and nates. The under-clothes of the child should be frequently examined, and if any part is found to be wet, it should be immediately removed and substituted by a dry and clean one.

In dressing children there ought to be as few pins used as may be practicable, for the proper adjustment of the clothes. Children are frequently much injured by the points of pins being accidentally directed inwards in handling them, or by their own movements. I have witnessed several instances of very unpleasant consequences from this source; and the instances of slight but painful punctures and scratches from pins used in the dress of infants are very common. Tapes and strings should therefore be used instead of pins, whenever they can be made to answer the purpose. If pins are used at all, the larger kind should always be selected; for the small pins now in general use, are much more apt to slip through the clothes and consequently to wound the skin than the larger kind (Dewees).

Before leaving this subject it will be proper to say something concerning the usual mode of dressing children, so as to leave the neck, upper part of the chest, and forearms perfectly bare. Whilst adults are careful to keep these parts well covered and protected against the influence of cold, children are almost universally suffered to be without such protection; and the nudity of the neck and arms is generally continued, until they are four or five years old. It has been supposed that this custom is one of the principal reasons why inflammatory affections of the respiratory organs are so much more common during the period of childhood, than at a more advanced age; and there can be no doubt that its influence, in this respect, is very considerable. Nothing is more common than to see children out of doors, with the arms and upper parts of the chest, completely exposed, even in damp and cold weather; and it cannot be believed that such exposure is unattended with risk of injurious consequences. Croup, inflammation of the lungs, catarrh, and general fever are doubtless frequently the consequences of this irrational custom; and it is not improbable that the foundation of pulmonary consumption is often thus laid, during the first few years of life. This custom, therefore, ought to be abandoned, as one of a decidedly injurious tendency, more especially during the cold and variable seasons. During the warm months of summer, the arms, and neck may be left bare, without any particular liability to injurious consequences; but every part of the chest should at all times be protected with suitable clothing. It is generally supposed that the usual mode of dressing children, is calculated to inure them to the impressions of cold, and to obviate the liability to disease from this cause. Doubtless this may be the result with those who survive the experiment; but before the system is thus inured, the child may be carried off by some inflammatory affection, produced by such exposure. It is certainly a most inconsistent practice to expose the breast and arms during the weak and tender age of childhood, and yet to deem it necessary to keep these parts carefully covered after the system has acquired firmness and its full powers of vital resistance by a more mature age.

The universal custom of covering the infant's head with a cap, is of very doubtful propriety. There is naturally a strong tendency to a preternatural determination of blood to the head during infancy; and the predisposition to inflammatory diseases of the head, is confessedly, much greater during this early age, than at any other period of life. If the rule to "*keep the head cool,*" is ever applicable, it is particularly so during infancy. In cold and damp weather, a very thin and light hat may be proper; but during the warm seasons, it will be conducive to the child's comfort and health to suffer the head to be wholly uncovered; and even in winter, if the child's head is well covered with hair, and it be confined within doors, caps may be very prudently dispensed with.

CHAPTER III.

OF THE NOURISHMENT OF INFANTS.

There is probably no single source of disease, during the first few years of life, whose influence is so extensive and destructive, as improper management in relation to the diet. The foundation of irremediable chronic diseases, and of constitutional infirmity, throughout the subsequent period of life, is often laid within the first month, or even first few days after birth, by errors of this kind; and a great amount of the suffering and mortality which occurs during infancy, must be ascribed to the same prevailing source of injury and disorder. The almost universal custom of feeding children with inappropriate articles of food, very soon after birth, is extremely reprehensible. No sooner is the infant washed and dressed, than the nurse is ready with her spoon and cup of gruel, pulverized crackers dissolved in water, or some such preparation, to fill its stomach to the utmost of its capacity; and this process of stuffing is continued with a ruinous degree of diligence and perseverance. The tender and uninured digestive organs of the new-born babe are thus often seriously injured during the first twenty-four hours. Nature herself seems to point out the impropriety of this practice. She withholds the nourishment which she provides, until many hours after birth. It seems highly improbable, if it were necessary that the infant should receive nourishment soon after birth, that the appropriate alimentary fluid should be so tardily furnished. We no where find such an inconsistency in nature. It is true, indeed, that the secretion of milk in the maternal breasts is often delayed a much longer period, than it would be prudent to withhold nourishment from the infant. Still we perceive, in this arrangement, that aliment is not necessary to the welfare of the child very soon after its birth. It cannot be presumed that the activity of the digestive organs, and a demand by them for nourishment is immediately awakened, on the child's entrance into the world. We no where see a physical want established without the appropriate means being furnished for satisfying it. I do not indeed, mean to inculcate, that nourishment is to be entirely withheld from the infant until the milk is secreted; but I am persuaded, that with healthy infants, several hours, at least, should be suffered to pass immediately after birth before any alimentary substances are introduced into its stomach; and I would most strenuously insist on the importance of exhibiting but small portions at a time, and at such intervals, as will obviate all risk of overloading or distending the stomach. This latter error is the most to be deprecated. A few tea-spoonfuls of some very bland and weak fluid, could not be deemed detrimental, though given immediately after birth; but the usual practice of filing the stomach to overflowing, and keeping it in this state of fulness and distention, is most ruinous to the health and comfort of the child. At every period of life over-distention of the stomach, by food or drink, is one of the most certain and powerful causes of indigestion; and we can scarcely conceive it possible, that the tender and uninured stomach of the new-born infant, can escape serious debility and irritation, when early overcharged with food even of the mildest kind. The digestive powers of the stomach being thus prostrated or enfeebled, all the harassing and painful consequences of indigestion ensue. Acidity, flatulency, colic, diarrhœa, vomiting, green and griping stools, emaciation, not to mention other distressing and dangerous symptoms inevitably supervene. In nine cases out of ten, perhaps, the griping, flatulency, diarrhœa, and colic which so frequently harass infants, during the first half year after birth, are the results of indigestion, brought on by errors in diet. Not unfrequently the digestive powers are effectively prostrated by the first feeding. Conceiving that, as the child has been fasting during the long period of nine months, it must needs come into the world with an excellent appetite, and an immediate demand for nourishment, ignorant nurses—(and the ignorant are incomparably most numerous) deem it their duty, to be most vigilant and industrious in charging the infant's stomach with some alimentary substance—often extremely inappropriate. To relieve the colic, griping, flatulency, diarrhœa, &c. which ensue, recourse is had to cat-mint tea, anniseed tea, Godfrey's cordial, paragoric, or some other palliative or nostrum, and thus an additional source of gastric derangement or indigestion is brought into operation. The screams and restlessness of the infant occasioned by the griping and colic, are frequently regarded as manifestations of hunger. To appease this supposed craving, the stomach is almost constantly kept in a state of distention with food; and thus the helpless babe has no chance of escaping from the torments and ruinous consequences of its unfortunate condition. Very vigorous and healthy infants often pass through the gastric irritation and distress produced by improper nourishment soon after birth, without sustaining any permanent injury in health or constitutional infirmity. After four or five months of flatulency, griping, &c., the digestive organs gradually become inured to the impressions of the food, and a considerable degree of health is obtained. In many cases, however, the irritation which is thus kept up in the stomach and bowels, does not pass off in so favourable a manner.—Jaundice, chronic and unmanageable diarrhœa, emaciation, slow fever, enlarged mesenteric glands, dropsy in the brain, scrofula, chronic affections of the liver, epilepsy, and other dangerous maladies, may, and not unfrequently do, result from this state of the alimentary canal, during infancy. Great distress and suffering, are sometimes witnessed during the early period of infancy, from indigestion, and consequent gastro-intestinal irritation, even where the child is wholly nourished by the breast. For when, during the time which intervenes between the secretion of milk, and the birth of the child, crude articles of nourishment are superabundantly introduced into the infant's stomach, the digestive functions are often, at once, so deranged and impaired, that even the wholesome and congenial fluid furnished by the maternal breasts, will not be easily digested; and acidity, flatulency and colic will continue to harass the child, until the digestive powers gradually acquire a greater degree of vigour.

That the jaundice of infants is generally produced by dispeptic irritation, I have not the slightest doubt. Mucous irritation of the duodenum, is now well known to be an active and frequent source of this malady; and this affection is very rarely found to occur in new-born infants without being preceded by decided manifestations of irritation of the digestive organs. Let the child's stomach be once or twice filled during the first twenty-four hours with gruel, or any of the ordinary preparations employed by nurses for this purpose, and the chances will probably be as ten to one, that acidity, vomiting, colic, griping, and jaundice will supervene. There is assuredly no period throughout the whole course of life, in which the observance of caution, in relation to the ingesta is of greater moment than in the comparatively short interval which passes between the birth of the infant, and the secretion of its natural aliment. If the powers of the stomach are not prostrated during this short interval, which by the customary mode of management is seldom avoided, and the child is fortunate enough to be nourished by its mother's milk, the ordinary gastric disturbances of infancy will rarely supervene. Alimentary ingesta, are not, however, the only sources of direct gastric irritation and indigestion at this early period of life. Much mischief is, doubtless, often done, by the means employed for removing the *meconium.* Active purgatives are sometimes given for this purpose; and there is much reason for believing that the infant's digestive functions are often injured in this manner. I have hitherto dwelled especially on the importance of withholding nourishment from the child, immediately after birth, and before milk is furnished by the maternal breast. I am induced to be the more urgent on this point, because many who would not think of feeding the child, after the breasts supply a sufficient quantity of the appropriate nourishment, consider it necessary to do so before the milk is secreted, lest it may suffer from want of nourishment. I have already stated that there can be no objection to the exhibition of small portions of some very mild and simple fluid to the infant, previous to its receiving nourishment from the breast; and when the secretion of milk is considerably delayed, this measure will even be proper. A mixture of two parts of fresh cow's-milk, and one part of warm water approaches nearer to the nature of human milk than any thing else that can be conveniently procured. Of this a few teaspoonfuls may be given from time to time, carefully avoiding overcharging the stomach, until the mother's breasts are ready to yield their more congenial nutriment. In order to excite the early secretion of milk, it will be proper to let the child draw the breasts, for a few minutes, soon after the mother is comfortably fixed in bed, provided her health and strength will admit of it. After the secretion of milk is once fully established, and furnished in sufficient quantity, the infant should be nourished exclusively by the breast. Not even the mild and simple fluid just mentioned should be allowed, unless some special reason exist for the use of additional nourishment. It seldom occurs in healthy mothers, that the quantity of milk supplied by the breast is not sufficient to afford adequate nourishment to the child for the first two or three months, and in general much longer, without the necessity of any additional artificial food. Should it be otherwise, however, or should there be an inability of suckling the child, in consequence of the mother's ill-health, or disease of the breasts, the mixture of milk and water mentioned above, should constitute the sole aliment, until the primary teeth make their appearance; or what is still more suitable, a healthy and fresh wet-nurse should be procured.

There is no substance in nature, nor can there be any thing prepared by art, which forms so congenial and wholesome a nourishment, during the early period of infancy, as the human milk. When it is supplied in sufficient quantity, no other alimentary substance ought to be given, during the first three or four months after birth. It seems, almost superfluous to remark that nature manifestly intended this fluid, as the sole nutriment at this early stage of life. Throughout the whole range of the higher orders of animated beings, the structure of the mouth, particularly in relation to the absence or presence of teeth—their conformation, position and situation,—furnishes unequivocal indications, as to the kind of food most appropriate and salutary. The same relation between the condition of the mouth, in this respect, and the kind of aliment best adapted to the welfare of the system, occurs during infancy; and an attention to this circumstance, affords a good general index, as to the kind of diet best suited to the new-born infant, and the changes which it will be proper to make according as it advances in age. The infant comes into the world with soft and toothless gums,—full and prominent lips, and an instinctive ability and readiness to grasp the nipple with its tongue and lips, and to perform the actions of suction in the most perfect manner. For a considerable time it remains wholly incapable of performing the motions of mastication. It is evidently the design of nature, that the infant shall obtain its nutriment by suction; and as the maternal breasts with their grateful and congenial lacteous fluid, correspond with this arrangement and intention of nature, it is manifest, that these constitute the only natural and truly appropriate source of nourishment during early infancy.

The infant should be nourished exclusively by the breast, until the first teeth make their appearance. No other kind of nourishment whatever, should be allowed, anterior to this period, unless from deficiency of milk or some other cause, the use of additional aliment becomes necessary. After the first teeth have come out, small portions of barley-water, thinly prepared arrowroot, or a mixture of equal parts of cow's-milk and water, may be given two or three times daily, in addition to the nourishment drawn from the breasts. I do not mean to say, that when the child arrives at this stage, it becomes necessary, or even decidedly proper, as a general rule, to exhibit any additional articles of food. In general, however, the simple and mild liquids, just mentioned, may be given at this period, with very little risk of unpleasant consequences; for the digestive organs have, by this time, acquired a degree of power and activity sufficient to obviate the painful and disturbing effects which would arise from the use of such food during the first four or five weeks after birth. I have very rarely known any ill consequences to occur, from the moderate use of the articles of nourishment just mentioned, at this period of infancy; and I am satisfied, that when the breasts do not furnish a sufficiently copious supply of milk, they may, in general, be resorted to, with perfect propriety. It is particularly important however, when additional aliment is used, to avoid overloading the stomach; for over-distention, seldom fails to impair the tone of the stomach, and to give rise to dyspeptic disturbances. It is also of much consequence that the food should be introduced into the stomach, as gradually as practicable. In suckling the child receives its nourishment very gradually; and this should be imitated, when artificial food is given by the hand

This can be most conveniently done by causing the infant to suck the fluid aliment from a bottle, furnished with the usual silver tube, the mouth-piece of which is pierced with a *small* orifice. By this contrivance, the child will receive its food in the same gradual manner, as when nourished at the breast, and it will rarely take more than its appetite calls for, an error which is frequently committed when fed with a spoon. After the *seventh* month, small portions of the preparations of food just mentioned, should be given at *regular periods*, three or four times daily. This will prepare the infant, for the sudden change, which it has to undergo in the character of its food, when it is weaned; and thereby tend to lessen the liability to unpleasant consequences from the change. Infants who have been moderately fed with suitable articles of food, sometime previous to weaning, almost always accommodate themselves much more readily and with much less uneasiness to the change, than such as have seldom or never received any other aliment, than that which they draw from the mother's or nurse's breasts.

If the appointments of nature, and experience shew that human milk is the appropriate aliment during infancy, it is manifest that the mother's breasts constitute the only genuine fountain from which this delicious and congenial nutriment is to be drawn by the infant. Mothers ought never to delegate the suckling of their infants to others. This sacred office should rest with the mother alone. It is an irremissible duty, which can never be neglected or put off, without contravening the wise and benevolent arrangements of Providence. The mother who submits the suckling of her infant to another, while her own breasts are ready to furnish an ample supply of milk, can scarcely possess an amiable and moral heart. It is indeed a most extraordinary circumstance, that a duty which is so strongly enforced by the commands of nature, and which is connected with so many delightful and hallowed sentiments of the maternal heart, should ever be voluntarily relinquished. Did we notice this unnatural and cruel practice only among the low and ignorant, we might ascribe it to that blunted sensibility and obtuse moral feeling which is apt to be engendered by the privations and hardships of poverty. But it is not so. It is only among educated, refined and polished females, that we witness the appointments of nature, and the decencies of maternal conduct thus outraged. It would seem as if the higher refinements of civilization tended rather to stifle, than to cherish the pure and instinctive sentiments of the heart, and to substitute the dictates of fashion for the original and unerring impulses of nature.

As it is manifestly the design of nature, that the infant should draw its food from the mother's breasts, it is reasonable to presume that this design cannot be contravened, without subjecting both mother and infant, to an increased liability to injurious consequences. It can scarcely be doubted that the mother's milk, is, in general, better adapted to the constitutional temperament of her offspring, than that furnished by others. Besides, when the suckling of the infant is submitted to a nurse, it is liable to various sources of injury and disorder, which are in a great degree, if not entirely obviated, when this important duty is performed by the mother. The nurse may not be able to furnish a sufficient supply of milk to afford adequate nourishment to the infant. This is by no means uncommon. Nurses often practise great deception in this respect. In order to obtain employment, or retain their situation, they will declare that they have an abundance of milk, when, in truth, the very reverse is the case. To supply this deficiency of milk, the wily nurse will resort to clandestine feeding; and as this is generally done in a very improper way, the child usually fares much worse, than if it had been, from the beginning, nursed exclusively by appropriate artificial food. The food which is thus secretly hurried into the stomach of the child, never fails to give rise to griping, flatulency, colic, diarrhœa, and fretfulness. To allay these sufferings, carminatives and anodynes are privately resorted to; and thus, whilst the parents suppose that the infant enjoys the advantage of proper nursing, its health, and even life are often sacrificed to the secret practices of a mercenary and unprincipled nurse.

The child, also, runs much more risk of receiving bad and unwholesome milk, when suckled by a hired nurse, than when this office is performed by the mother herself. I have known several instances of most serious injury inflicted on the child's health and constitution in this way. That syphilis may be, and has been communicated through the milk of the nurse, I have not the smallest doubt; and the communication of other loathsome diseases, by nurses, to their nurslings, such as itch, tetter, &c., is by no means uncommon. But even where no specific disease of this kind, is contracted, the general health and constitution are often permanently injured by the unwholesome or uncongenial character of the milk furnished by the nurse. When the milk of the nurse is of a bad quality, it usually produces very obvious disturbances in the digestive organs of the infant. The stomach and bowels become weak and irritable. The child vomits frequently, or is harassed by painful and watery diarrhœa. It becomes restless, fretful, and peevish; its flesh wastes and becomes flabby; its countenance assumes a distressed, pale, and sickly aspect; its sleep is disturbed by sudden starts; it often cries out suddenly as if in violent pain; and, in most instances, fatal irritation, and effusion in the brain, finally ensue, and terminate the infant's sufferings.

Besides the foregoing sources of injury to the health and comfort of the infant, there are many others, scarcely less detrimental in their tendency, incident to wet-nursing, and which can seldom be wholly avoided, when this mode of nursing is adopted. To attend properly to an infant, by day and by night, requires sacrifices of ease and comfort, on the part of the nurse, which are not often fully submitted to by hired nurses. The mother alone can experience those instinctive and anxious promptings, to administer to the wants and comforts of her offspring, which are necessary to secure the faithful performance of this important duty. Children often suffer much from the indolence and carelessness of nurses. They are suffered, frequently, to lie, for hours, in their wet and soiled diapers, and to remain for days without proper ablutions. Much neglect too, is sometimes practised in suckling the infant. Its stomach is now engorged with milk, that the nurse may have time to walk out, or attend to some of her own affairs, and then, all nourishment is withheld for an unreasonable length of time. At night particularly, the nurse is too indolent or too sleepy to keep the child clean and dry, and to apply it regularly to the breast; and in order that it may not disturb her rest, laudanum, paregoric, or some other anodyne, is clandestinely given to the little victim. The same culpable practice of stupifying the infant with laudanum, is often resorted to during the day, in order that the nurse may attend to some affair of pleasure, or business on her own account. These are not imaginary charges. I have repeatedly known them practised, where such mismanagement was not suspected; and too much vigilance cannot be exercised in observing and scrutinizing the conduct of nurses. It is to be observed moreover that the child is liable to very serious injury from irregular habits on the part of the mother. Intemperate nurses are particularly to be reprobated. I have, in several instances, known infants to be very seriously injured by nurses of this description. Women who hire themselves out for wet-nurses, appear to be more liable to this vice, than almost any other class of females. Under an idea, that while suckling, they require some stimulus to support their strength, and to promote the secretion of milk, they are apt to drink freely of malt liquors, which often leads them, in the end, to resort to the more ardent alcoholic liquors. Thus, the habit of intemperance is sometimes formed; and although they may not drink to the extent of producing intoxication, yet the milk will become unwholesome and injurious to the infant nourished by it.

From the foregoing remarks, founded on experience and observation, the impropriety of excluding the child from the mother's breasts, and submitting it to the nursing of a stranger, is very manifest. To be obliged to procure a wet-nurse is always an evil, and cannot but be viewed as such, by every sensible, humane, and good mother.

Unfortunately, however, mothers are not always in a condition which enables them to suckle their own infants; and the employment of a wet-nurse, or recourse to artificial nursing, is unavoidable. The causes which may prevent the mother from nursing her child are: 1, A decided deficiency, or total failure in the secretion of milk, in consequence of organic disease or functional torpor of the breasts. 2, A bad state of milk, rendering it decidedly prejudicial to the health of the child. 3, The presence of a morbid taint, or some communicable chronic disease in the maternal system. 4, When suckling gives rise to painful or dangerous affections in the mother, as colic, cough, distressing nervous affections, great weakness, epilepsy, &c.

When causes of this kind render it improper or impracticable for the mother to nurse her child, it then becomes a question whether a wet-nurse should be employed, or artificial nursing resorted to. If a healthy, fresh, and faithful nurse can be procured, this mode of nourishing the infant, is certainly preferable to artificial nursing. It is not often, however, that a nurse can be obtained who is, in all respects, well qualified for this office. In general, a nurse who has no child of her own to take care of, is much to be preferred to one who has this additional charge; more especially when the infant intrusted to her care, is removed from the immediate observations of its parents. The foster-child is always more or less neglected when the nurse has an infant of her own to attend to. If there is a deficiency of milk for both, the promptings of maternal feeling, will be very apt to favour her own child; and, if the latter should become sick, and require particular attention, the foster-babe will seldom receive proper nursing. When the wet-nurse is received into the parents' house, the superintendence of the mother, may, in general, prevent such misconduct on the part of the nurse; but when the child is nursed out of the house, and removed from the presiding care of a watchful parent, the probability of its being neglected and maltreated is always very considerable. It would, in general, be much better to nurse the child artificially, under the eye of its mother, than to place it entirely at the mercy of the wet-nurse. Nurses, doubtless, are sometimes found, to whom a child may be safely intrusted; but experience has but too often shewn that the reverse is much more common.

Attention must also be paid to the previous and present health of the nurse. No woman, who has led a debauched course of life, even though reformed, can be regarded as a perfectly safe nurse, however careful and attentive she might otherwise be. Females of this description are apt to have their systems contaminated with some morbid taint, which may give an unwholesome quality to the milk, and injure the child's constitution. The existence of scabby or scaly eruptions on the skin, unless they are of transient character, and of chronic ulcers, particularly on the legs, should be regarded as sufficient objections to a nurse. A manifest scrofulous habit, also, is decidedly objectionable. The age of the milk is another point of considerable importance. Milk that is six or seven months old, seldom agrees well with infants during the first two or three months after birth. In general the milk becomes much more rich and nutricious after the fourth month, than it is previous to this period; and hence milk of this kind, from its requiring stronger digestive powers than younger milk, often gives rise to much disturbance of the stomach and bowels in new-born infants. As a general rule, therefore, the age of the milk, should not vary much from that of the child, up to about the fourth month. After this period, such a relation between the ages of the milk and child is not of much importance; for a child five or six months old and upwards, may be well and safely nourished by a fresh breast.

The occurrence of the menstrual evacuation, during lactation is almost invariably attended with diminution and deterioration of the milk; and constitutes a well-grounded objection to a wet-nurse. This is more especially the case during the first three or four months of infancy. When a child, at this early period, is put to the breast of a nurse who menstruates, it rarely fails to experience derangements of the stomach and bowels. After the seventh or eighth month of age, there is much less inconvenience and disorder to be apprehended from this source; but even at this advanced period of infancy, the milk of a nurse, thus circumstanced, may give rise to disturbances in the digestive organs, and should, if possible, be avoided. Nature, here, as elsewhere, is a safe guide. We perceive that menstruation is almost universally suspended during the period of suckling; and we may presume that this arrangement of nature is designed for some useful purpose—for the well-being, doubtless, of the infant. Nature, therefore, as well as experience, indicates the propriety of withholding the breast from the child, when from constitutional peculiarity, or some accidental influence, the menses make their appearance in the nurse.

A nurse who has but one good breast should never be selected. A child suckled by one breast only, is apt to contract the habit of squinting, from having its eyes constantly directed to one side; and there is also some risk of its head and shoulders acquiring an oblique or crooked form. Even when both breasts are perfect and exuberant, some nurses are disposed to suckle principally with one only. This should not be permitted. The child should be nourished alternately from both breasts. Some attention should also be paid to the nurse's nipples. If they are very small, the child will be apt to fatigue itself in sucking, without being able fully to satisfy its wants. This defect can seldom be properly remedied. The practice of drawing out the nipples by suction, with a tobacco pipe, will be of advantage; but when the nipples are very small, and deeply imbedded in the breast, it can scarcely remedy the evil. In some instances the nipples yield the milk so freely, that the child is continually harassed by a sense of strangulation, while suckling, from inability to swallow as rapidly as the milk issues into its mouth. This may, in general, be remedied by passing a piece of fine tape pretty firmly round the base of the nipple; or the nurse may compress the nipple moderately between the first and second fingers, while the child is suckling.

Finally, particular regard should be had to the temper and moral habits of the nurse. An irritable, passionate, and sour-tempered female is but illy suited for this important duty. Not only is the child liable to be maltreated by a nurse of this character, during the fits of ill-nature and passion; but the most serious and alarming effects may be produced on its tender organization, by the milk of such a nurse. It is well known that violent anger, and habitual sourness of temper are peculiarly apt to give a pernicious quality to the milk. Children have been thrown into convulsions, by suckling soon after the nurse has been agitated by violent anger or rage; and alarming vomiting and purging is particularly apt to occur from this cause. Indeed every kind of inordinate excitement, or depression of the mind is unfavourable to the secretion of healthy milk. Protracted grief, sorrow, or mental distress and anxiety in the nurse, seldom fail to exert a prejudicial influence on the health of the nursling. This circumstance ought not to be overlooked, in choosing a wet-nurse. Women, whose domestic relations expose them to moral affections of this kind, cannot be regarded as well adapted for this office. Tranquility of mind, and evenness of temper are particularly desirable in a nurse; and no female ought to be admitted to this duty, who is, either by temperament, or extraneous circumstances, placed in an opposite condition.

Artificial Nursing.—Under judicious management, infants will, in general, experience no particular inconvenience from a course of artificial nursing; and, as a general rule, this mode of nourishing children, when properly conducted, is upon the whole preferable perhaps, to the employment of a wet-nurse whose competency and fitness is equivocal. This preference, however, is founded rather on the greater risk which the child incurs of being mal treated and neglected, when submitted to the exclusive care of a wet-nurse, than when nursed artificially, under the immediate superintendence of a parent; for there can be no doubt, that fresh human milk, when uncontaminated, is always the best possible nourishment for infants.

There are indeed circumstances, in relation to the condition of the child, which render the employment of a wet-nurse, notwithstanding all the risks that have been mentioned, decidedly preferable to artificial nursing. Very young, and peculiarly delicate and feeble infants, seldom do well when raised by the hand. Fresh and wholesome milk from the breasts of the mother, or a healthy nurse, is almost indispensable to the well-being of an infant thus circumstanced. The same observations apply to infants, whose stomach and bowels are peculiarly weak and irritable, and consequently particularly liable to disorder, from even slight sources of gastro-intestinal irritation. Finally, if upon trial, the slightest and most appropriate kinds of artificial aliment are found to disorder the alimentary canal, the life of the infant will very probably depend, on its being nursed by a fresh and wholesome breast.

In many instances, however, it is wholly impracticable to procure a suitable wet-nurse, and artificial nursing becomes unavoidable. Sometimes the mother, though incapable of supplying a sufficient quantity of nourishment by the breast, is still able to furnish small portions of wholesome milk, and when this is the case she ought by all means, to continue suckling the child, in conjunction with the use of artificial nourishment. The kind of aliment which should be employed, and the mode of feeding proper, in cases where there is a deficient secretion of milk in the maternal breasts, have been pointed out. A mixture of two parts of fresh cow's-milk, and one part of warm water, with a very small portion of sugar will, in general, answer the purpose better than any other article of food, that can be contrived. Thin barley-water, or a very liquid preparation of arrow-root, will sometimes be useful as a change of nourishment, where, from accidental weakness, or a prevailing acidity in the stomach, the milk curdles, and causes griping. As has already been mentioned, the sucking-bottle is decidedly the best mode of feeding the child. Particular care should be taken to keep the bottle perfectly clean and sweet. It should be well washed, both inside and outside, with hot water, every morning and evening. The same food should not be suffered to remain in the bottle more than three or four hours. When kept too long it is apt to turn sour, and to become injurious to the child's stomach and bowels. After the child has satisfied its appetite, no new supply of food should be added to what may have been left. The quantity of nourishment put into the bottle, should not be much greater than what may be deemed fully sufficient for one nursing; and if any remains, it should be emptied and the bottle well rinsed with fresh water. By these precautions the food will always be sweet, and free from offensive or irritating qualities. Dr. Dewees advises that "the extremity from which the child is to suck should be covered with a heifer's teat, in preference to any thing else." Teats of this kind, properly prepared, are not, however, always to be procured; nor do they appear to me preferable to a few folds of fine and soft linen drawn over the mouth-piece, with a minute orifice, corresponding with the opening of the tube. The teat is often too bulky for the child's mouth, and it is very apt to become hard and unyielding, unless removed and immersed in water after each nursing; in which case it is, on the other hand, liable to become too flaccid and relaxed. Two or three folds of soft linen are readily applied, and may be taken off and washed, or substituted by a fresh and clean piece, without any inconvenience. A common eight-ounce vial, or a half-pint decanter, furnished with a silver tube having a flat and oblong mouth-piece, will, in general, answer this purpose very well. When the child uses the bottle, it should be taken up and supported in an easy semi-recumbent position, on the lap or arms of the nurse. The practice of *dandling* and *jolting* infants soon after they have taken nourishment, is decidedly improper. The child should be kept quiet for at least thirty or forty minutes after having received its nourishment. Rest is particularly favorable to digestion: more especially during its primary stage. It would seem as if the digestive organs required a concentration of the vital energies upon themselves, to enable them to perform this important function with due rapidity and ease. Nature constantly verifies the truth of this observation. All animals manifest an inclination for repose and quietude after a full repast; and experience has shown that, the process of digestion is particularly liable to be impeded by strong mental or corporeal exercise or agitation immediately after a full meal.

Children, who are entirely nursed by artificial diet, should be restricted to the use of the milk-and-water mixture mentioned above, until several teeth have made their appearance. They will, in general, enjoy more perfect health and thrive better, when nourished exclusively with this simple aliment, than under the use of any other nourishment that can be made. After the third month, however, the proportion of milk should be somewhat increased: namely, three parts of milk to one part of water. After the first teeth are protruded, the food may be a little more varied and substantial. Grated crackers dissolved in warm water; oat meal gruel; liquid preparations of arrowroot, tapioca, or sago; milk thickened with rice flour, and thin pap, may be allowed in moderate quantities along with the ordinary milk-and-water mixture. When these preparations do not agree with the child's stomach, they should be mixed with an equal portion of weak mutton, chicken, or beef broth, clear and well freed from fat. A mixture of this kind is, in general, easily digested, and rarely causes any unpleasant effects on the alimentary canal, when used after the first teeth have made their appearance. With some children, no form in which cow's milk can be given will agree with the stomach. In such cases, farinaceous decoctions, mixed with a small portion of cream, are generally digested with perfect ease. Thin oat-meal gruel, or rice flour boiled in water, with the addition of a teaspoonful of cream to each gill of the liquid preparation, will answer very well.

After the first grinding teeth are protruded, weak broths, slightly thickened with oat meal, rice flour, arrowroot, or grated crackers, mixed with milk, constitute, in general, the most appropriate articles of nourishment. A small portion of stale bread may also be allowed, two or three times daily, at this stage of infancy; but all solid animal food should be withheld until the canine teeth have made their appearance. After these teeth are protruded, small portions of animal food, in a solid state, may be allowed with perfect propriety. "The animal food given to young children should be plainly roasted or boiled. Fried and broiled meats, and all food heated a second time, by hashing or mincing, being less digestible, should be avoided. Many people, from a mistaken expectation of strengthening weakly children, give them more animal food, and sometimes twice or thrice a day: but it will be found much more frequently to add to the debility than to the increase of strength. Those children, on the whole, who eat the least animal food, are the most healthy. Nothing is more absurd than the notion that, in early life, children require a variety of food. One food only is provided by nature for them, and it is too presumptuous to assume that the Creator of the world acted in error, and that the ingenuity of man is able to correct it or make any improvement in his works."

The peculiarly excitable state of the system during dentition and the consequent tendency to febrile irritation, render the *free* use of animal food decidedly objectionable during this stage of childhood. Small portions of the more digestible meats may be allowed to healthy children, once daily, with little or no risk of injury; but they should never be permitted to form the principal part of the food. The lean parts of mutton, lamb, tender beef, game, and fowl, should be selected. Veal, pork, pig, goose, duck, and all kinds of salted meats, being of much more difficult digestion, can seldom be used without impeding digestion, and finally injuring the tone of the stomach. Veal is decidedly the most objectionable of all the meats in common use. Fresh fish, boiled, and taken in moderate portions, seldom disagrees with the stomachs of children, and may be used, occasionally, with perfect propriety. Soft boiled eggs, too, form an appropriate article of nourishment for children after the first teeth have come out. When fried, or boiled hard, they are altogether unsuitable. Strongly seasoned meats, compound dishes, ragouts, hashes, meat pies, and pastry are to be wholly rejected. Simplicity and plainness are all-important requisites in the diet of children. Their meals should be made on a few plain and simple articles of food. Children who are indulged in the use of a variety of food, and in compound dishes, very rarely escape debility and irritation of the digestive organs. They soon become pale, dyspeptic, irritable, and languid.

The introduction of fresh food into the stomach before that which was previously taken is entirely digested, seldom fails to operate injuriously on the alimentary canal. To obviate this cause of mischief, an effort should be made, as soon as the child is weaned, to establish some regularity in the periods of taking nourishment; and sufficient time should be allowed for each meal to be completely digested before fresh food is taken. If the meals are not sufficiently remote from each other, the digestive organs will almost inevitably become weakened, from the constant state of action in which they are kept by the continual supply of food. As a general rule, from three to four hours may be regarded as a suitable interval between the meals. If the child requires nourishment between the regular meals, small portions of liquid aliment should be used. When solid animal food forms a part of the diet of children, it should be taken at noon, or in the forenoon. It should not be taken more than once daily, as a general regulation.

Pure water, with or without small portions of milk, constitutes the best drink for children, as it does for adults. The practice of allowing them a little wine, spirits, or malt liquors, is decidedly reprehensible. Children require no stimulus of this kind to excite and sustain their vital functions. The use of such drinks is especially improper during the irritable period of dentition. There exists, naturally, a strong tendency to a preternatural determination of blood to the head, in early childhood,—particularly while the process of dentition is going on. Some of the most fatal diseases of infancy are intimately connected with this condition of the circulation; and it is obvious, that the use of alcoholic stimulants must have a direct tendency to increase this irregular flow of blood to the head, and consequently to increase the liability to inflammatory diseases of the brain.

Sweetmeats.—Indulgence in the use of sweetmeats is a copious source of disease and mortality during childhood. Dried fruits preserved with sugar, nuts, baked sugar, &c. are among the most indigestible substances employed as food. There are few individuals, even in adult age, whose digestive organs are sufficiently vigorous to digest such articles with facility; and their frequent or abundant use rarely fails to impair the tone of the stomach, and to cause intestinal disturbances. Fruits preserved with their skins, as *raisins*, are particularly pernicious. The cuticle, or skin, of all fruits is of peculiarly difficult digestion. The most active digestive powers are, in general, insufficient to digest this portion of fruits. Added to this the hard and insoluble seeds which raisins and many other fruits in common use contain, render them highly irritating and injurious to the alimentary canal. In vain are judicious dietetic regulations adopted for the nourishment of children, if articles of this kind are allowed. I have known two or three raisins to produce the most serious and protracted disorder of the intestinal canal in infants. Three instances have occurred to me, in which convulsions and speedy death were, unequivocally, the consequence of overcharging the stomach with this indigestible and irritating fruit; and my friend, Dr. Cobb, has recently communicated to me a case, which occurred in his own family, of the most alarming character, produced by the same cause. The infant appeared to be well when put to bed. On attending to it about midnight, it was found cold, pulseless, with a deathlike expression of the countenance, and apparently dying. In a short time spontaneous vomiting came on, by which a large quantity of raisins was thrown from the stomach, after which all the alarming symptoms speedily disappeared. The raisins had been given to the child by a servant of the family without the knowledge of its parents.

The conduct of parents, in relation to this subject, is often extremely irrational and pernicious in its consequences. They would not themselves venture on the frequent and free use of confectionaries of this kind; and yet will indulge their children without scarcely any restraint, in the use of these pernicious luxuries. The sicklier and weaker the child is, the more apt, in general, is it to be allowed these destructive gratifications. The pale, feeble, and sickly child, whose stomach is hardly able to digest the most simple and appropriate aliment, is sought to be appeased and delighted by the luscious and scarcely digestible articles of the confectioner. Indigestion, intestinal irritation, terminating often in ulceration and incurable diarrhœa, are the frequent consequences of such conduct; and at best, such indulgences must, inevitably, prolong the feeble and sickly condition of the child, and not unfrequently eventuate in permanent constitutional infirmity.

With regard to the use of fresh fruits, writers, on this subject, have expressed different opinions. Apples, peaches, and apricots, when perfectly ripe and mellow, may be occasionally allowed to children, in moderate portions, with entire safety, unless the stomach and bowels be very weak and irritable. In children of a costive habit, the temperate use of these fruits may even have a beneficial effect, by their tendency to excite the action of the bowels. Nothing, however, of this kind is more prejudicial to health than unripe fruits. Unripe apples, so frequently seen in the hands of children, are particularly injurious; both on account of the difficulty with which they are digested, and the peculiar and pernicious quality of the crude juice, or acid, which they contain. Pears, even of the tenderest kinds, appear to be much more indigestible than ripe apples or peaches, and seldom fail, when freely taken, to cause some uneasiness and disturbance in the alimentary canal. Stewed or roasted fruits, particularly the two latter kinds, are, in general, well adapted to the digestive powers of young children, and may be allowed, occasionally, with perfect propriety, provided they are not very sour. When the acid prevails to such a degree as to require the addition of sugar to render them sufficiently palatable, stewed or roasted fruits of this kind rarely agree well with weak and delicate stomachs, and cannot be allowed to young children without considerable risk of unpleasant consequences.

In general, all fruits having a firm cuticle or skin, such as grapes, whortleberries, &c. are improper articles of food for children. The latter berries, especially, are invested with so firm a cuticle, that even the most energetic digestive powers are insufficient to dissolve it; and it is, doubtless, in part, on this account, that of all fruits of the kind they are the most apt to excite internal irritation and diarrhœa. The pulp of grapes, freed from the seeds, rarely causes disorder in the alimentary canal, when taken in moderation; and children may be safely indulged in the use of small portions of it. When swallowed with the skin and seeds, however, grapes are decidedly hurtful; and, as children rarely attend properly to the rejection of these parts, this fruit cannot be put into their hands, without considerable risk of injury from this source. Fruit, that contains small, hard and insoluble seeds—such as strawberries, blackberries, currants, &c. are particularly apt, when freely taken, to disorder the alimentary canal. The seeds, resisting the digestive powers, irritate the mucous membrane of the bowels; and when, from previous causes, this membrane has become enfeebled and irritable, they may readily excite dangerous irritation. Small insoluble bodies of this kind, frequently remain lodged in the folds of the bowels for many days and even weeks, and give rise to severe and unmanageable disorders of the alimentary canal. I have known a child to evacuate from its bowels a great many small seeds, three weeks after the fruit which contained them had been eaten; and during all this time it had suffered painful and exhausting diarrhœa. *Cherries* are among the most pernicious fruits in common use, and ought to be wholly excluded from the list of articles with which children may be occasionally indulged. Even when eat without the stones, they are peculiarly apt to derange the bowels; and when swallowed with the stones, which, with children, is not unfrequently the case, they are capable of producing violent and even fatal impressions on the alimentary tube. No small number of instances have come under my notice, where the most alarming and, in a few cases, fatal consequences resulted from the irritation of cherry stones lodged in the bowels. Convulsions, inflammation, unconquerable constipation, and exhausting and harrassing diarrhœa, are among the affections which are apt to arise from this cause. All fresh fruits have a tendency to excite, more or less strongly, the peristaltic action of the bowels. As a general rule, therefore, every kind of fresh fruit is improper for children whose digestive organs are weak and irritable, or who are habitually liable to disorder of the bowels. If the digestive powers are vigorous, and there exists no obvious tendency to bowel complaints, small portions of the fruits in common use, the seeds and skins being rejected, may be allowed occasionally, with little or no risk of mischief. It is of much importance, however that the quantity of such articles taken into the stomach at a time be moderate; and that they should never, with children, be suffered to form the whole, or even principal part, of meals.

CHAPTER IV.

OF EXERCISE.

The importance of permitting the infant to have the unrestrained use of its limbs, has already been dwelled on, when speaking of Dress. At first, its spontaneous motions are, indeed, but very limited; for the muscular power, and the command of volition over it, are acquired in a very gradual manner. Uncertain and awkward motions of the arms—stamping with the legs, and drawing them up, are the first feeble attempts which the infant makes in the use of its muscles. But even these muscular exertions appear to be indispensable to the preservation of its health and the proper developement of its powers; and it should be an especial object of care to allow entire freedom of motion, several hours daily, by avoiding all modes of dress and position tending to restrain the free use of the extremities. With this view, the infant should be taken from its bed and laid on its back upon a soft mattress, or any other level and slightly resisting surface, and divested of every thing calculated to restrain the motion of its limbs and body. When thus indulged with freedom of action, it will soon exercise its feeble limbs, by moving them in various directions; and manifest, "by its repeated and apparently earnest, efforts, how much it enjoys this exemption from restraint." This should be repeated two or three times daily; and in warm weather the air should be freely admitted. Voluntary exertions of this kind are much more efficient in developing the powers of the muscular system, and bringing it early under the commands of volition, than any of the *passive* modes of exercise in common use. Children, who are frequently permitted to exercise their muscles in this way, will, *cæteris paribus*, learn to use their limbs and walk earlier and more steadily than those who are seldom allowed this freedom of voluntary action.

Carrying.—Besides the exercise which infants thus obtain by their own muscular efforts, *passive* exercise should be regularly afforded them, by carrying in the arms and riding in an easy carriage. This kind of motion, when conducted in a proper way, has a highly salutary influence on the developement and vigor of the infantile organization. The use of it should be commenced as early as the second or third day after birth, provided the infant be not unusually feeble; and it should be daily attended to, as one of the regular and indispensable duties of nursing. The manner, however, in which very young children are usually carried or exercised, is extremely reprehensible, as it is calculated to give rise to very unfortunate consequences in relation to the health and regular conformation of the child's body. I allude, particularly, to the common practice of carrying infants with their bodies in an erect position, before the spine and muscles have acquired a sufficient degree of firmness and activity, to support the trunk and head in this posture. The child is usually carried by the nurse pressing its thighs and hips, with the left forearm, against her body, whilst its trunk is balanced in an upright posture, by resting lightly against her bosom. Thus the whole weight of the infant's trunk rests upon the feeble and yielding spine, while the unsupported head is, in general, suffered to lean constantly to one side, or to roll about in every direction. It requires but little reflection to perceive, that this mode of carrying infants must interfere, very materially, with the regular and symmetrical developement of the body. The feeble spine, yielding to the superincumbent weight of the head and body, is always curved outwards while the infant is held or carried in the erect position; and, when this is daily repeated, for several hours, as is frequently the case, the back is liable to become permanently bent or distorted. A habit, too, of leaning the head to one side is sometimes contracted by the child; and, from the violent manner in which the head is liable to fall from side to side, serious and even fatal injury may be inflicted on the spinal marrow of the neck—a remarkable instance of which is related in Hufeland's Journal. But even after the spine and its muscles have acquired a sufficient degree of firmness, to enable the child to support its head and body in the erect position, without difficulty, it incurs considerable risk of injury from the usual practice of carrying it, almost exclusively on one arm. Nursery-maids are very apt to fall into this error, unless particularly directed to change the arm on which the child is carried. When this precaution is not used, and the child is carried almost wholly on one side, it is apt to acquire the habit of leaning to one side, which it is always very difficult to correct. The child, also, when carried in this manner, usually throws one of its arms around the neck of the nurse, in order to support itself more steadily in the erect position; and of course always with the same arm, when the side on which it is carried is not changed by the nurse. In consequence of this position, the shoulder-blade and side of the chest are liable to be forced upwards and outwards, which may ultimately result in permanent distortion of these parts. The *manner* of carrying infants is, indeed, of far greater moment than seems to be generally supposed. Many a parent has had occasion to lament the unfortunate consequences which may result from the errors just mentioned; and yet, it must be confessed, that mothers seldom pay that attention to this subject which reflection and maternal solicitude would seem to suggest.

The spine and its muscles seldom acquire sufficient strength and firmness, before the end of the third month, to enable the child to support its body in an upright position, without inconvenience or risk of injury. Until this power is manifestly acquired, the infant should not be carried, or suffered to sit, with its body erect, without supporting it in such a manner, as to lighten the pressure made on the spine, and aid it in maintaining the upright posture of its head and trunk. But even when thus supported by the nurse, it should not be kept in an erect position more than one or two minutes at a time, and not until it is four or five weeks old. At first (a few days after birth) the infant should be taken from its cradle or bed, two or three times daily, and laid, on its back, upon a pillow, and carried gently about the chamber. Struve observes that, the best mode of carrying very young infants is, to lay them into a small oblong basket. By this contrivance a gentle and agreeable swinging or undulating motion will be communicated to them; and the sides of the basket being three or four inches higher than the child's body, a cover may be thrown over it, without restraining the free motion of its limbs. After the third or fourth week, the child may be carried in a reclining posture on the arm of a careful nurse, in such a way as to afford entire support to the body and head. This may be done by reclining the infant upon the forearm, the hand embracing the upper and posterior part of the thighs, whilst its body and head are supported by resting against the breast and arm of the nurse. When held in this way, it may be gently moved from side to side, or up and down, while it is carefully carried through a well ventillated room. When it is found that the child has acquired a sufficient degree of muscular power to maintain itself in a sitting posture—which rarely occurs before the completion of the third month—it may be carried about, in this position, for a short time, twice or thrice daily, provided the spine and head be supported by the nurse: an aid which can seldom be prudently dispensed with before the child is six or seven months old. "During the first six months," says Struve, "the head of the infant should, in carrying, be supported by the nurse's hand; for the muscles of the neck are, at this tender age, too delicate to preserve the head in an erect posture." Mothers are fond of exhibiting the exploits of their babes, in raising and supporting their heads—"unconscious of the mischief which may be occasioned by this premature experiment." It is painful to see the violent and generally abortive efforts, which the infant makes to steady its head, when raised into a sitting posture. It will sometimes succeed in balancing its head for a moment, to the great delight of the fond mother; but the effort is almost invariably speedily followed by a sudden and often violent rolling of the head from side to side, which cannot but have an injurious tendency.

All rapid, whirling, and concussive motions are calculated to injure the health and delicate organization of infants; and mothers should be particularly vigilant in preventing nursery-maids from subjecting their charge to such violence. Running or jumping with an infant in the arms—descending rapidly a flight of stairs—whirling round, &c. ought to be rigidly forbidden, as they are attended with much risk of some serious accident, and may interfere with the regular distribution of the circulation, and the healthy action of the brain and other important organs. The practice of supporting very young infants in a sitting posture on the knee, and jolting them violently, cannot be too severely censured. It is not uncommon to see mothers and nurses jolt infants in this manner, with a violence that threatens dislocation, and manifestly occasions them much pain and distress. Tossing them rudely on the arms, though less concussive than jolting on the knee, is equally reprehensible, as it is attended with more risk of injury from falls, blows, &c. These violent agitations, "powerfully affect the delicate organization of infants, and may be productive of spasms, epilepsy, and appoplectic fits." Gentle and cautious tossing on the arms, affords an agreeable exercise of the body, and may be salutary by the moderate agitation which it causes in the internal organs.

Different opinions have been expressed with regard to the propriety of rocking infants in cradles. To gentle and cautious rocking, there can be no just objection. The swinging, or rolling motion of the cradle, communicates an agreeable sensation to the system, and disposes to calmness and repose: and when moderately practised, and not very often and long continued, it can scarcely give rise to any evil consequences. It is otherwise, however, with violent, rude, and almost constant rocking. Rapid and long-continued rocking motion, instead of merely calming the excitement of the brain and inducing a state of agreeable repose, as is the case when gently and slowly performed, is apt to disorder the actions of this organ, in a very decided manner, and, through it, to exert an injurious influence on the whole organization. With infants predisposed to diseases of the head, strong rocking should be particularly avoided.

Riding in a Carriage.—This is an excellent mode of affording suitable exercise to infants, and may, with great propriety, be employed as an occasional substitute for carrying in the arms. When cautiously managed, it affords a gentle, uniform, and very agreeable motion, for which children, in general, soon contract a great fondness.

The body of the carriage should be long enough to permit the infant to lie down at full length; and the sides ought to be sufficiently high to prevent it falling or rolling out. The wheels should be low, in order to lessen the liability of oversetting; and they must be carefully secured "against running off when the carriage is in motion." Like carrying in the arms, this mode of exercising infants is liable to be conducted in a very improper and hazardous manner. This duty is usually entrusted to children or young girls, who being generally more disposed to consult their own sportive inclinations than the comfort and safety of their charge, are apt to draw the carriage along with great rapidity. paying little or no attention to the roughness or unevenness of the ground over which they pass. Such careless conduct ought to be particularly forbidden by parents; and especial instructions given, that the carriage be drawn along with a moderate and steady pace, and over level grounds. Very young infants should be laid down in the carriage, on a pillow or a small and soft mattress, with the head slightly elevated, "and so confined at the sides as to prevent them from rolling when in motion." After the child has acquired some degree of strength, it should be placed in a semi-recumbent posture, with its head and back well supported by pillows, &c.; and when it is capable of supporting its head, it may be permitted to sit upright in the carriage, being properly secured against being thrown from side to side by the rolling of the carriage.

Walking.—After the infant has acquired sufficient strength to support itself in the sitting posture, it should be placed on a soft carpet, several times daily, and surrounded with its toys. When thus left to the free use of its limbs, it will soon learn to *crawl*—an exercise which should always be freely allowed, and even encouraged, as the most natural preliminary muscular effort to the more difficult one of walking. The common practice of teaching children to walk, by supporting them, prematurely, on their legs, and leading them forward, without allowing them the advantage of having their muscles previously strengthened and in some degree brought under the commands of the will, by the initial locomotive exercise of *crawling*, is objectionable on various accounts. It seldom fails to produce more or less unnatural curvature of the legs; and in infants of a scrofulous or ricketty habit, it may readily give rise to distortion of the spine and round shoulder. Children, who are permitted to exercise their muscles by *crawling*, generally acquire a much firmer step, and enjoy more robust health, than "those who have been taught to walk without this useful intermediate muscular discipline."

"Before infants attempt to walk," says Dr. Struve, "they should first learn to crawl. With this intention, they should be placed on a large carpet, where they will soon busily employ themselves; move and extend their limbs, or roll about to reach their playthings. If the weather is serene, and the ground perfectly dry, they may be carried out, and placed on a grassplat, where they can range about in all directions; and if they happen to fall, they will not receive material injury on the soft ground, but rather learn to be more cautious in future. While in the nursery, they may be taught to rise from the floor by laying hold of chairs; and, if occasionally supported under the arms, they will easily learn to stand erect; but they should never be raised up by one arm only. At an early age they may be held under both arms; and when thus supported, the hands of the attendant be occasionally withdrawn for a moment, they will soon acquire the power of standing alone. Mild and persuasive language ought to be used in these experiments; while the infant may be encouraged by some toys placed at a little distance, which will induce it to stretch out its little arms, and endeavor to advance towards the place containing the desirable objects. By such means it may be allured to visit different parts of the room. The first journey of this description ought to be attempted only from one chair to another; and afterwards, the little traveller may run towards its mother, or nurse, who stoops to receive it with extended arms. As the child improves in its efforts to walk alone, the chairs may be placed at a greater distance from each other; and when it sees its older companions run and jump about, it can scarcely be restrained, so anxious is it to be placed on the floor, that it may crawl or waddle after them. At length, parents are gratified with one of the most delightful scenes: they behold their child for the first time walking without any assistance. If we are earnestly desirous of training up our children in such a manner, that they may acquire a firm step, and well-formed limbs, we shall gain our purpose much more certainly and safely, by pursuing this gradual and cautious mode of teaching them the use of their legs, than by the more common practice of placing them, prematurely, on their feet, without permitting them the previous exercise of crawling."

Leading-strings and go-carts, formerly so much in use, are now, very properly, almost universally abandoned. The former contrivance is calculated to do very serious injury, by the rude manner in which infants are liable to be pulled about by inconsiderate or illnatured nurses; for, when the child makes a false step, or inclines too much forward or to one side, and is in danger of falling, it is usually raised by a sudden and violent pull at one or both strings. Dislocations and other painful injuries have frequently been occasioned in this way. Leading-strings, moreover, tend to compress and distort the shoulders; and children are apt to acquire an unsteady and awkward gait, when taught to walk in this manner. Go-carts are still more objectionable. They confine and constrain the body in a very uncomfortable manner; and, as in pushing the machine along the floor, the breast is usually firmly pressed against the circular top, injury may be done to the regular developement and conformation of the upper part of the chest. The very common practice of teaching infants to walk, by holding them by one of their hands, deserves the most decided reprehension. When led in this way, the child's arm is continually, and often forcibly, extended upwards: if it happen to lose its balance, or trip, or if its legs are yet too feeble to support itself long, in the erect posture, the whole weight of its body is often suspended by one arm. Frequently, too, it is entirely raised from the ground by one arm, in order to help it over some obstacle, or to hasten its progress over a rough and difficult piece of ground. It is easy to perceive that this practice must, necessarily, and in no inconsiderable degree, tend to draw the shoulder and side of the chest out of their natural position; and, when frequently repeated, to give permanent deformity to these parts. From the sudden and violent extension which the arm usually receives when the child stumbles, the shoulder and elbow joints are liable to be dislocated or sprained, or the clavicle may be torn from its attachment with the scapula. I have met with several instances of dislocation of the shoulder joint, which were occasioned in this manner; and the occurrence of painful sprains —often of several weeks continuance, from violence done in this way, is by no means uncommon. Parents should most earnestly forbid this mode of leading infants, when entrusted to the care of servants out of doors. Nursery-maids seldom exercise sufficient care in this respect. Too indolent to carry the infant in their arms, as they are directed and supposed to do, they are apt, as soon as they are no longer observed, to place the child on the ground, and to hurry, or rather, drag it along, in the most careless and unfeeling manner. Of a similar, but still more reprehensible character, is the practice of raising infants from the ground by both arms and swinging them about in the air. Fractures, dislocations, sprains, and other dangerous and painful injuries, have frequently resulted from this irrational conduct. No prudent parent will knowingly permit such an outrage; but, as the ordinary attendants on children are often thoughtless and rash, they should always be especially cautioned on this point.

After children have acquired the entire use of their legs, walk-

ing is decidedly the best exercise they can take. When the weather is fine, they should be taken out daily, and freely indulged in running and walking about, under the superintendence of a careful nurse. These little excursions, if prudently conducted, have a highly salutary influence on the infantile system. Children, who are raised in the country, are in general much more robust, healthy and active, than those who are brought up in cities: and this difference is mainly to be ascribed to the greater freedom which the former usually enjoy, of walking, running, and tumbling about on grassplats—enjoyments often in a great measure denied to the latter. In taking this kind of exercise, children should not be accustomed to rely too much on the assistance of others. If the ground is favorable; that is, if it is soft or covered with grass, and free from stones, timber, &c., they should be permitted to have their way. A few falls will do them no injury; but, on the contrary, make them less timid, and teach them better than any other instruction how to avoid a similar accident in future. Children, who are never suffered to surmount the little difficulties which may occur in their sports, by their own efforts, and continually warned against trifling accidents, seldom fail to become unduly timid, helpless and irresolute in their actions. Parents ought not to intimidate their children, by inspiring them with a constant dread of falling or hurting themselves. The custom of exaggerating the dangers incident to their usual sports—and of plying them continually with admonitory injunctions against accidents, when they are engaged in their amusements, is calculated to favor the occurrence of the very accidents which they are meant to obviate, by the timidity which these perpetual lessons of caution and fear almost inevitably inspire. When the ground is soft, it is much better to let the child take the chance of two or three falls, and give it full scope for the exercise of its limbs, by running and gamboling about until it is satisfied. Nothing can be more invigorating to the whole organization than this kind of unrestrained exercise, in suitable situations, and under the superintendence of a prudent nurse. Struve, whose excellent observations on this subject I have already drawn on so frequently, observes that, when children happen to fall or hurt themselves, they should not be soothed by expressions of extreme pity and sorrow; for plaintive words and expressions of great sorrow tend very effectually to render them effeminate and timid. Children, who are thus accustomed to excessive commisseration, seldom fail to acknowledge this tender sympathy, by straining their little lungs to the utmost by crying, on every slight injury they receive.

After children have passed through the period of primary dentition, they should be encouraged in the pursuit of active amusement out of doors, as an essential and regular part of physical discipline. Nothing contributes more effectually to enfeeble the body, and to lay the foundation of permanent constitutional infirmity, than confinement within doors and want of active exercise at this tender period of life. The developement of the moral and physical energies of children can in no way be more effectually promoted, than by permitting them to engage freely in the usual sports of childhood, in the fresh and open air. The practice of obliging children to remain within doors, and to con over their lessons, between school hours, is by no means commendable. These intervals should be devoted to innocent amusement and bodily exercise. Trundling the hoop—flying kites—playing at ball, shinny, or simply skipping and running about, with other juvenile sports unattended with danger, have a decided tendency to improve the health and vigor of the system, and should be freely permitted during the hours not necessarily devoted to the school. Girls may amuse themselves with skipping the rope, dancing, walking, shuttlecock, a well constructed and safe swing, riding in a carriage, &c.

CHAPTER V.

AIR,—TEMPERATURE,—EXPOSURE.

That pure air is indispensable to the entire well-being of the human organization, is so well established by the common sense and experience of mankind, that it seems unnecessary to enforce its truth by any especial illustrations. The *importance*, however, of attending particularly to this point, in the management of children, does not, in many instances, appear to be sufficiently estimated. At no period of life are the effects of confinement in stagnant and impure air, more obviously and lastingly detrimental to the animal economy than during the feeble and susceptible age of childhood. How deeply pernicious a foul and confined air is, in its influence on the human system, is most strikingly illustrated in the pale, feeble, and sickly aspect of those unfortunate children who are early placed in manufacturing establishments, where they are confined, nearly the whole day, in crowded and ill-ventilated apartments. Children brought up in the crowded and filthy parts of large cities, seldom exhibit a perfectly healthy and vigorous appearance. Go into the country, and you will everywhere meet with children rioting in the exuberance of health—plump, ruddy, robust and active. Exercise and simplicity of wholesome diet, doubtless contribute essentially to this healthful condition; but, no regulations of diet—no attentions to exercise, and no sanitary observances whatever, are adequate to produce a similar fortunate result, when counteracted by the continued depressing influence of a confined and contaminated atmosphere.

Infants ought to be early accustomed to the fresh and open air. The practice of confining them, during the first five or six weeks, to the close and heated air of nurseries, has a direct tendency to impair the energies of the system, and to impede its healthful developement. The daily enjoyment of fresh air, for an hour or two, contributes very essentially to the health and sprightliness of infants; and constitutes one of the most efficient preservatives against that delicate and sickly condition, which is so frequently witnessed in those who are almost constantly confined and pampered in nurseries. "Pale countenances, weak eyes, general relaxation of the body, an accumulation of all the inconveniences and sufferings of childhood—at length consumption and early dissolution of life: all these are the natural and frequent consequences of such confinement. On the contrary, there is no method, by which children may be more effectually preserved against such unfortunate events, than by permitting them to inhale a fresh and uncontaminated air. Pure air is, indeed, most grateful to the feelings of children. After having been carried out, but a few times, they evince, even at a very early age, a strong desire to return to the open air. While yet on the arms of the nurse, they anxiously point to the door, and make efforts to approach and open it. When they can scarcely crawl, they instinctively advance towards that part of the room from which they have a prospect of escaping. Hence, in the bosom of nature they experience the greatest comfort; and their tears can frequently be stopped in no other way, than by taking them out of doors into the free air." (*Struve.*)

When the weather is clear and of a mild temperature, infants should be carried into the open air, once or twice daily, as soon as they are two weeks old. During cold and humid weather, they should be occasionally conveyed out of the nursery into an adjoining well-aired room: avoiding, however, strong currents of air, and sitting with them near an open window. Important as the enjoyment of fresh air is to the health and comfort of infants, care should be taken to accustom them *gradually* to the impressions of the external air—more especially when the atmosphere is cold and damp. The practice of exposing children, soon after birth, at once to the open and cold air, with the view of "hardening them," as it is called, is attended with considerable risk of injury, and should not be permitted by parents, except when the weather is clear and very mild. Catarrhal and other inflammatory affections are frequently contracted in this way; and in feeble children, low temperature, when thus suddenly applied, is apt to occasion serious depression of the vital energies, and to predispose very strongly to the occurrence of febrile and other dangerous maladies from the subsequent influence of the ordinary exciting causes of disease. Instead, therefore, of exposing any young infants, at once, to the direct impressions of the external air, when the state of the atmosphere is unfavorable, they ought to be gradually inured to such a transition, by carrying them frequently out of the nursery into the cooler and less confined air of well-aired and unoccupied rooms. In this way, they will soon become, in some degree, habituated to sudden transitions of temperature, and to the more direct impressions of the open air. Even in summer, the infant should not, as a general rule, be carried, at once, into the external air, without having been previously accustomed to the air of a well-ventilated chamber. After the child is three or four days old, it ought to be conveyed, several times daily, out of its nursery, into a room having, at first, only the windows open, and in four or five days afterwards, the doors also, so as to admit of a free circulation of the air through every part of the room. This having been practised for ten or twelve days, the child may then be carried out of doors, and permitted to enjoy the pure and open air. At first, it should not be allowed to remain out of doors more than ten or twelve minutes at a time; but the duration of this indulgence must be gradually extended, so as to keep it in correspondence with the progressive developement of the child's organization and energies. After a child has acquired the power of walking, it should be suffered to spend a great portion of its time in the open air, and in the pursuit of its ordinary amusements, provided the weather is sufficiently temperate and dry. Nothing affords more real enjoyment to children, and at the same time tends more decidedly to give them a sound and active tone of mind and body, than a liberal indulgence in exercise and their innocent sports out of doors. A country residence possesses many important advantages in this respect, which cannot be had in large cities. There, they constantly breathe a delightful and perfectly pure air, and may be safely permitted to run, skip, and tumble about under the shade of trees, and on the soft and green surface of a lawn or grassplat, almost without restraint and risk of receiving any serious hurt or injury. In cities, on the contrary, the atmosphere is always more or less contaminated with impure and noxious exhalations; and children cannot be prudently permitted to enjoy the same freedom of exercise and active amusement out of doors, as in the country, from the constant risk of receiving some injury when suffered to be on the side-walk, and the confined and narrow space of ground usually allotted to the houses. But, although the atmosphere of cities is always far from being perfectly pure, still, the daily enjoyment of the *open air*, impure as it may be, is decidedly beneficial, and should never be withheld, under an idea, that by free ventilation and cleanliness the air breathed within may be rendered as pure as it is out of doors. In cities of small extent, children "may be taken to a garden or field near the town;" and the larger cities generally afford public squares, or parks, devoted to the exercise and recreation of the citizens, to which children may be, conveniently, taken, where they may enjoy a free and fresh air, and amuse themselves by playing and running about on the grass." (*Struve.*) These little excursions have a very salutary tendency; for, besides the excellent effects of the exercise which they afford, there is something peculiarly enlivening and grateful in the influence of the open air, which children seldom fail to manifest by their expressions and actions. When they have the advantage of a lawn or grassplat, children should be allowed to amuse themselves freely in their own way. "Boys may be permitted to run about, without their hats, though exposed to the wind and sun. If they do not, spontaneously, complain of heat or cold, it may be considered as a proof that they are in good health; for diseased and debilitated children will speedily return to the nursery. If they cry, and cannot bear the blast of a moderate wind, or a slight degree of cold, it is then proper to return with them to the house, as they are probably indisposed; but if, on the contrary, we find them lively and cheerful, they may be allowed to continue in the air as long as they are comfortable and easy. Children should not be forced against their inclination to go out of doors, during a fall of snow or the intense heat of summer. If they are once inured to a rough atmosphere, no compulsion will be necessary." During the first two or three years of infancy, no difference need be observed in relation to this subject between boys and girls. Parents are, in general, averse to allowing girls the same freedom of exercise and amusement in the open air that is usually granted to boys, on account of the tendency which free exposure to the atmosphere and the direct rays of the sun has to render the skin dark and harsh. A white and smooth skin, and a delicate organization are, by many, regarded as marks of a genteel education; and these vain distinctions are often sought and obtained at the expense of health and a firm constitution, by too much seclusion from the external air and light of the sun. Girls, like boys, ought to be freely and frequently exposed to the open air and weather. The complexion may not become so delicate and fair, when this freedom of exposure is permitted; but the more pleasing appearance of florid and robust health, accompanied with a delightful feeling of buoyancy and vigor, will be obtained in its stead: a result infinitely more valuable than fairness and smoothness of skin and delicacy of structure,—and which will extend its salutary influence throughout the whole subsequent period of life. "Not a day," says Willich, "should be suffered to pass without affording children—both boys and girls—the benefit of exercise in the open air. In this instance, custom ought to become second nature; they must be inured to external impressions; and the daily enjoyment of this balm of life should constitute an essential part of their regimen."

Although children should be permitted to indulge freely in exercise and active amusement, during their daily excursions in the open air, constant care ought to be had, that they do not lie down or sit on the cool and damp ground, or in a strong current of air in the shade, when they are in a state of perspiration from exercise; nor should they, on any account, be permitted to drink cold water, except in very small portions, and at considerable intervals, when in this heated condition. A neglect of these precautions is apt to give rise to the most serious consequences. Inflammation of the brain, lungs, stomach, bowels, liver—catarrhal affections, terminating ultimately in disorganization of the lungs, croup, and violent inflammatory rheumatism, are often suddenly excited by cold and dampness when applied while the body is thus especially predisposed to their morbific influence. Nurses and servants should always be especially instructed on this point; and as soon as children are old enough to comprehend the lessons of caution, they should be earnestly impressed with the evil consequences of these practices, and of the necessity of avoiding them as an irremissible condition of their being permitted to run about and play out of doors.

It is not enough, however, that children be taken into the open air, for an hour or two daily, in order to secure them the full amount of benefit which may be derived from this source; for unless proper attention be constantly paid to the preservation of a comparatively pure and fresh air, in the rooms in which they sleep and spend the greater part of their time, the temporary enjoyment of the external air cannot effect a great deal towards the permanent invigoration and health of their systems.

Particular care should, therefore, be taken to prevent the air of nurseries from becoming impure and stagnant, by proper attentions to cleanliness and ventilation, and the avoidance of every thing which may tend to give rise to unwholesome effluvia. When the atmosphere is mild, the external air ought to be freely admitted into the room, by keeping a window open during the day; and at night the chamber door may be left open, or a sash raised, whilst the current of air is intercepted by the closed shutters. In cold and humid weather, the upper sash of a window should be occasionally drawn down a few inches during the day. At night, a window in the adjoining apartment ought to be left open, the fresh air being suffered to enter the nursery, by the door of communication. Chimney boards, as they impede the free circulation of the air in rooms, are decidedly inadmissible in well-regulated nurseries. The same objection exists to "double doors, linings, listings and sand-bags"—all of which, by preventing some degree of ventilation, contribute to an unwholesome condition of the air. Indeed the maintenance of a proper circulation of air in the apartments appropriated to children, cannot be too strongly urged on the attention of parents. Even where the general atmosphere is impure, as is always the case in large cities, free ventilation should never be neglected; for, however contaminated the external air may be, it soon becomes still more impure and insalubrious, by being breathed in a confined or stagnant state. The practice of using the nursery as a common sitting room, by the female portion of the family is extremely improper,—more especially when from the inclemency of the weather, the doors and windows cannot be kept sufficiently open, to secure a proper renewal and circulation of the air. Each individual exhausts the vivifying principle of nearly a gallon of air every minute: and the contaminating and putrescent exhalations which are continually issuing from the human body, constitute a source of rapid atmospheric deterioration.

The observance of strict cleanliness, also, is indispensable to the preservation of a pure air in nurseries. The floor should be kept clean and dry; wet and soiled articles of clothing must not be suffered to remain in the room; and the child's excretions ought always to be speedily removed. "No food should be cooked in nurseries, if it can possibly be avoided; nor should linen be washed, dried or ironed there, as these processes tend to render the air offensive and impure. Hanging up the linen of children or drying their diapers in the place where they respire, produces exhalations highly detrimental to their eyes, as well as injurious to the general health." No flowers ought to be cultivated in nurseries, since they not only tend to deteriorate the atmosphere during the night, but often give out effluvia that are highly injurious to the animal economy. It need scarcely be observed that the burning of charcoal, out of the full draught of a good chimney, is always attended with the utmost risk of alarming or fatal consequences.

There is no part of the management of nurseries more important in its consequences, than a proper regulation of the temperature. The apartments of children are, in general, kept much warmer than is consistent either with comfort or health. Nothing tends more directly to enfeeble and relax the human body, and to predispose it to the injurious influence of cold and atmospheric vicissitudes, than habitual confinement in heated rooms. The cutaneous and pulmonary exhalents, being kept, almost continually, in a state of inordinate excitement by the stimulus of the heat, acquire so great a susceptibility to the depressing influence of low temperature, that the slightest exposure to the open air, is apt to arrest their action, and to give rise to the various distressing and dangerous consequences of a suddenly checked perspiration. "Warm rooms," says Struve, "in my opinion, principally contribute to the extraordinary mortality of children, who are carried off by convulsions, in the first months of their lives. As they daily become weaker from the constant action of heat, every draught of air occasioned by opening the windows or doors is dangerous to their organs. It is an established fact, that in the proportion as we habituate ourselves to warm dress and heated apartments, so do we render the body more liable to be injured by exposing it to the influence of fresh or cold air." Children who are accustomed to immoderately warm rooms are seldom entirely free from coughs and colds during cold and humid weather; for as they cannot be always confined to their apartments they are unavoidably at times exposed to the impressions of cold air. As the continued influence of atmospheric heat has a very decided tendency to increase the irritability of the system—rendering it morbidly susceptible of the impressions of irritating causes, the practice of keeping the air of nurseries very warm is particularly detrimental to children during the period of dentition. Under the most judicious sanitary regulations, the systems of children are apt to acquire a morbidly irritable condition during this process. It is manifest, therefore, that when this natural tendency to an irritable habit, is promoted by the cause under consideration, the liability to disease must be peculiarly great. When we take into view the tendency which exists during dentition to a preternatural determination of blood to the head, in connection with the general irritable and inflammatory condition just referred to, it is obvious that children who spent the greater part of their time in heated rooms, must be especially liable to inflammatory affections of the brain, from the occasional impressions of cold to which they are necessarily more or less exposed.

The temperature of nurseries should never be suffered to exceed 70° of Fahrenheit. In general a temperature of about 65° or 66°, is sufficiently comfortable; and experience has shown, that it is best adapted to secure the health and vigor of the human system. This moderate degree of heat does not favor the generation of noxious effluvia from decompositions; nor does it impair the natural powers of vital resistance, to the injurious impressions of cold, or sudden transitions of temperature. Children who are accustomed to this temperate degree of warmth, may be taken into the open and cold air, without any peculiar risk of injury, from its sudden depressing influence.

CHAPTER VI.

THE NURSERY.

From what has already been said, in the preceding chapter, in relation to the great importance of preserving a pure and fresh air in the apartments of children, it is obvious that a good nursery ought to be spacious, perfectly dry, airy, and elevated above the ground floor. In general these important requisites to the proper adaptation of nurseries for the purposes of comfort and health are too much neglected. Instead of selecting a large and airy apartment, the narrowest, most indifferent and cooped up room in the house is often appropriated to this purpose. It is very difficult to preserve a proper degree of purity and circulation in the air of a small room, without subjecting its inmates to much inconvenience and risk of taking cold. From the smallness of the space, the air of such a room, soon becomes contaminated by breathing, perspiration and other unavoidable sources of impure effluvia. To preserve a sufficient degree of purity and freshness in the air, recourse must be had to frequent ventilation, by opening a window or door. A constant fluctuation of temperature is thus kept up in the apartment; and those who remain in it, are much exposed to the injurious influence of repeated currents of damp and cold air. These unfavorable circumstances are, in a great degree, obviated by a large and airy room. Ventilation need not be so frequently repeated, and may be performed without injurious vicissitudes of temperature, or direct exposure to strong and sudden draughts of cold air. Independent of the greater facility of keeping up a suitable degree of temperature, purity, and circulation in the air of spacious apartments, nurseries of ample dimensions are particularly desirable also on account of the opportunity which they afford to children of taking exercise, by running and jumping about on the carpet, "when the weather will not permit them to enjoy the advantages of the open air."

A nursery consisting of two chambers opening into each other possesses many very important advantages over a single room. With such an arrangement the children may sleep in one room, and remain in the other while awake. They may thus enjoy the advantage of going to sleep in pure air; and of passing, in the morning, out of their bed-chambers, at once into the renewed and purified air of the other apartment. They may also avoid inconvenience and risk of injury, from the dust, currents of air, &c. which attend the sweeping, dusting, washing and ventilation of the nursery; for while these operations are going on in one room, they may retire into the other.

With regard to the best means for warming nurseries, there exists some difference of opinion. Dr. Dewees objects to the use of stoves, because: "1st, there is greater danger that the children may get severely burnt; 2d, they are almost always too much heated; 3d, they render the air too dry; 4th, the air is almost constantly injured by substances thrown upon the stove, as grease, meat, &c.; 5th, there is always a temptation to do some kind of cooking upon or in the stove, to the annoyance of the comfort, or the injury of the health of the inmates, besides the serious risk of scalding by heating water upon it." Carelessness and improper conduct may, indeed, convert any contrivance for warming apartments into a nuisance. Most of these objections apply with equal, if not greater propriety to open fires. The risk of injury from burns, is certainly quite as great from an open fire, as from a stove. How often do we hear of children receiving the most serious, and even fatal burns, from their clothes taking fire by coming in contact with open fires? The use of a good fender, will, doubtless, obviate the liability to this accident; but the risk of receiving burns from a stove may be quite as effectually prevented by surrounding it with a proper railing—and this should always be done in apartments appropriated to children. The tendency of stoves to produce too great a dryness in the air may be readily counteracted by keeping a small basin of water slowly evaporating on or near the stove. The objection that stoves are apt to be kept too warm, is founded rather on the abuse than on any positive unfitness of this mode of heating rooms, and may be effectually obviated by proper care and management. The same observation applies to the other objections—namely that stoves are apt to be used for cooking; and that grease, meat and other substances calculated to give rise to offensive effluvia are often thrown upon them, and the air thereby rendered impure. Open fires, are, in truth, much more frequently used for cooking in nurseries, than stoves; and although much of the steam and effluvia may be carried up by the draught of the chimney, enough of them is in general diffused throughout the room, to give an unpleasant and unwholesome character to the air. Whether stoves or open fires be used, cooking ought never to be permitted in well-conducted nurseries. If rooms warmed by stoves are more liable to be heated to excess, open fires, on the other hand, are more apt to keep up an injurious variation of temperature. The preservation of a steadfast and uniform degree of warmth, throughout every part of the room is particularly desirable in nurseries. This is easily effected by means of a stove, however spacious the chamber may be. With an open fire, on the contrary, it is always extremely difficult to procure a uniform temperature in large apartments; for while the air near the fire is uncomfortably warm, that of the remoter parts of the room is often disagreeably cold. Nevertheless, in small and confined nurseries, an open fire is upon the whole, preferable to a stove; for as the air of a small chamber is soon rendered impure by the breathing, perspiration, &c. of its inmates, a more regular influx and circulation of air is required, than in large rooms, to keep up a proper degree of atmospheric purity—and this is much more certainly obtained by the draught of an open chimney than by an ordinary close stove.

The windows of nurseries should be provided with bars fixed across the lower half of them, in order to prevent children from falling out—an accident which is by no means uncommon, when this precautionary measure is neglected. They should also be supplied with shutters, particularly when they face the south, "that the room may be darkened, when the exclusion of light becomes necessary or proper."

The floor of nurseries should be covered with a soft woollen carpet. This is especially proper, during early infancy; before children have acquired the full use of their legs, and while they are as yet subject to frequent falls and blows, in their feeble and uncertain efforts to move about the room. Children rarely receive any material injury from falling on a soft carpet: and when we advert to the very serious consequences which are apt to result from severe blows on the head during childhood, the want of carpeting must be regarded as a very considerable defect in a nursery. All superfluous furniture, should be excluded from the apartments appropriated to children. They should, however, be supplied with well-adapted contrivances for infantile amusement and exercise. A well-constructed rocking horse, usually affords children much delight combined with excellent exercise.

CHAPTER VII.

OF WEANING.

The period to which suckling may be extended without affecting the health either of the mother or infant is so entirely under the control of a variety of circumstances of an accidental character, that no particular term, of general applicability, can be assigned at which infants should be finally separated from the breast. In general, this important function is continued much longer, than a proper attention to these circumstances would justify; and the consequences of this error, are often of a very serious character. The only thing that is usually regarded by mothers, in fixing on the time for weaning, is the *age* of the infant. The child is suckled until it attains a certain age, without any regard to the developement of its digestive powers, or the state of its health and constitutional vigor. By this course, children may be kept at the breast, long after the vigor of the digestive functions, and the demands of the system require a more substantial and nutritive diet; and on the other hand, they may be separated from the breast, before the stomach has acquired sufficient energy to digest with due facility a stronger and less congenial aliment. The progressive developement of the digestive powers, and the demands of the organization in relation to nutrition, are very various among different infants. It is particularly important that the condition of infants, with regard to these circumstances, should be consulted in regulating the period of lactation. The obvious correspondence which exists between the successive appearance of the teeth, and the developement of the digestive powers, affords us a safe guide in relation to this subject. The child comes into the world with teethless gums, and instinctive powers, adapted in the most perfect manner, for drawing its nourishment from the maternal breast. It is not furnished with teeth, because neither the mode in which its appropriate nourishment must be taken, nor the character of the nourishment itself requires such organs, nor are the powers of the stomach as yet sufficiently active, to digest, in a proper manner and without injury, the kind of food which would require the aid of teeth. After the lapse of some time, varying in different cases from about two to four or five months, the first two inferior cutting teeth protrude through the gums. In the course of from four to six weeks afterwards, the two corresponding teeth of the upper jaw make their appearance. These, in three or four weeks, are succeeded by the *lateral* cutting teeth of the lower jaw; and in a few weeks subsequently, those of the upper jaw also make their appearance.

Now, as in relation to their use, the teeth have a direct reference to a more substantial aliment, than that which the stomach of the new-born infant is capable of digesting, we may reasonably infer, that the successive appearance of these accessary instruments of digestion, corresponds with the progressive developement of the important function which they are intended to subserve. Thus an infant that is furnished with four or more teeth, at the age of six months, may be presumed to possess more active digestive powers, and to require a more varied and nourishing food, than one, who, at the same age, is as yet destitute of these little instruments. When speaking of the nourishment of infants, it was remarked, that immediately after the first teeth have made their appearance, it will, in general, be proper to allow the child small portions of some of the blandest kinds of artificial food; and that both the quantity and nutritious quality of the aliment should be gradually increased, in proportion as the teeth are successively protruded through the gums. By the time that all the cutting teeth have made their appearance, the child's digestive organs will have acquired sufficient tone and activity to enable them to digest, without difficulty, a simple and appropriate artificial diet; and the system, in general, will have attained a state of developement which renders such a nourishment more suitable to the exigences of the organization, than the less substantial aliment derived from the maternal breast.

This period then—namely soon after all the incisor teeth have made their appearance—ought to be regarded as the proper time for weaning, provided no adverse circumstances, either on the part of the infant or the mother, render it necessary to terminate lactation sooner, or to prolong it to a more advanced age. It is evident, that according to this rule, the proper period of weaning, must vary considerably in different cases. It will seldom, however, be delayed beyond the eleventh month, and in the majority of instances will occur between the ninth and tenth month. I am entirely persuaded, both by experience, and by what appear to be the obvious intentions of nature, that, if the duration of suckling were always regulated by this rule, no inconsiderable amount of sickness and constitutional infirmity, both in relation to the mother and the infant, would be avoided.

Unless urgent reasons exist for an immediate separation of the infant from the breast, weaning ought always to be accomplished in a gradual manner. A sudden transition from the mild and simple nourishment obtained at the breast, to the exclusive use of a more substantial artificial food, could rarely fail to produce disorder of the digestive organs and bowels, even in the most robust and healthy children. If the mode of management which has already been indicated, in relation to the nourishment of the child be adopted:—that is, if small portions of the most simple and bland kinds of artificial food be allowed after the first teeth have made their appearance, and its quantity and nutritious quality be gradually increased, in proportion as the other incisor teeth come out, the stomach will be sufficiently prepared when the proper period of weaning arrives, to admit of an immediate passage from the nourishment of the breast to an exclusive artificial aliment, with but very little or no risk of unpleasant consequences. When the period of weaning is approaching small portions of bread, bread and milk, milk thickened with rice, or flour, rice, chicken, mutton or beef tea, &c., should be allowed the child, two or three times daily; whilst, at the same time, the intervals of suckling should be more and more prolonged. By this course of management the infant's stomach will be gradually accustomed to a more substantial nourishment, and its attachment to the breast insensibly diminished. When the child manifests great reluctance to a total separation from the breast, we may sometimes facilitate the weaning by applying some offensive substance to the nipples, such as aloes, infusion of colomba, or gentian, assafœtida, or a weak solution of sal ammoniac, &c. Some advantage may also be obtained by accustoming the child, to drink out of a tea-cup, saucer, or glass, and thus teaching it early, to receive its nourishment from vessels of this kind.

After the child has been weaned its principal nourishment ought still to consist of liquid or semi-fluid substances. Milk, milk boiled with bread, or slightly thickened with rice or wheat flour, rice, preparations of arrow root, tapioca or sago, oatmeal gruel, pulverised crackers dissolved in warm water with a little milk and sweetened, should constitute the principal nourishment until the eye teeth or fangs have made their appearance. Along with these fluid alimentary substances, small portions of bread, bread and butter, and weak and simple broths may be allowed occasionally, with perfect propriety. It is particularly important to guard against too full and nourishing a diet immediately after the weaning has been accomplished. Though gradually brought, in the way just stated, to bear the simpler kinds of solid nourishment when taken at distant intervals, the stomach is readily oppressed and disordered, at this period, if the transition to a substantial diet is abrupt. It will digest small portions of such food, without difficulty, when taken at considerable intervals; whilst a frequent and free use of the same articles, would soon overwhelm and exhaust the digestive powers, and give rise to a train of distressing dyspeptic affections. The quantity of solid food should, therefore, not be materially increased immediately after weaning: nor should there be any particular increase in the general quantity of nourishment whether solid or liquid, until the stomach has been fully accustomed to the change. After the eye teeth have made their appearance, however, the solid and more nourishing kinds of food should be gradually increased, until the process of primary dentition has been completed—by which time, the powers of the stomach are, in general, sufficiently developed, to admit of a full and substantial aliment.

Circumstances requiring a deviation from the above general rules for determining the duration of lactation. The progress of dentition is, doubtless, our safest guide, in regulating the nourishment of infants, and in deciding on the period, at which they may with propriety be put on the exclusive use of artificial food. Not unfrequently, however, circumstances of an irregular or morbid character, render it expedient, or even indispensable, to wean the child, before it has attained the age and organic developement, which, under ordinary circumstances would be deemed requisite to justify its final separation from the breast.

1. *The mother* may be affected with some constitutional malady, which may so contaminate her milk, as to render it highly injurious to the child's health, if she continues to nourish it at the breast. I have known several instances of extremely distressing affections in infants, obviously produced by the tainted milk obtained from nurses laboring under syphilis. Mothers, affected with scrofula in an active state, or with ulcerated cancer, should, on no account, suckle their infants.

The mother may also be so exhausted and debilitated by an attack of some acute disease, and the depletory measures requisite to subdue it, that she cannot continue to suckle her infant, without increasing her prostration and superinducing a train of alarming and highly distressing affections. The same difficulty is apt to occur, in mothers of a feeble, delicate and nervous habit of body, particularly when the digestive powers are weak, or so disordered that nourishing and substantial aliment cannot be taken. Under these circumstances, suckling can seldom be continued without producing the worst effects. The constant drain of the nutrient elements of the blood, through the breasts, causes a rapid increase of the debility, and gives rise ultimately, to a train of very distressing nervous affections, which cannot be removed or even materially mitigated so long as the infant is nourished at the breast. If the suckling be continued, the appetite and digestive powers fail; severe pains in the head ensue, the nervous system becomes greatly disturbed; transient pains, alternating with spasmodic twitches or numbness, occur in various parts of the body; the debility and emaciation advance rapidly; a multitude of anomalous nervous affections constantly harass the patient; a most distressing sense of sinking and emptiness, is at times felt in the region of the stomach; the mind becomes disturbed and tormented often with an intense dread of dying, or a constant apprehension of some dreadful accident. At last delirium and even mania sometimes supervene.

I have recently met with a striking example of this kind. The lady—always of an extremely delicate and feeble habit of body—was suckling a robust infant, about four months old, when I first saw her. Her digestive powers were very weak, and her general strength was so much impaired that she was obliged to remain, almost constantly, in bed. At times she experienced violent pains in different parts of the body—most frequently, however, in the back part of the head, and in one of the temples. Her whole nervous system was extremely excitable, and she suffered without intermission, a variety of exceedingly harassing nervous affections, Sometimes she felt a distressing sinking and emptiness in the pit of the stomach; at others, a general numbness extended itself throughout her extremities; often, she experienced alarming palpitation, and almost constantly complained of a benumbed feeling in the tongue, accompanied, occasionally, with an inability to swallow, and rapid spasmodic twitchings of the muscles of the face and extremities. These symptoms were attended with great mental disturbance—manifested by a constant and intense dread of dying, and great apprehensions of some overwhelming misfortune. Not the slightest advantage was obtained from medical treatment, although a great variety of means, apparently adapted to the case, were employed, with anxious diligence, for more than two months. She had repeatedly been urged to wean the infant which she continued to suckle, but always obstinately refused to comply with the request. At length, however, she was prevailed on to wean the child. In the course of three or four days, the symptoms under which she had so long suffered, evidently began to abate; and at the end of the third week, she was entirely freed of her harassing complaint. I have, indeed, often met with cases of a similar character, and the instances of very serious suffering and prostration among young and delicate mothers, from suckling, are probably of much more frequent occurrence than seems to be generally supposed. "Many young ladies," says a late writer, "on becoming mothers, are incapable of supporting the constant drain to which the wants of their infants subject them. They lose their good looks, become gradually weaker and paler, and as their strength declines, they become more and more afflicted with a variety of harassing nervous affections." Medicinal means are of no permanent advantage. They may procure more or less temporary mitigation of the symptoms, but they are wholly inadequate to the removal of the malady. *Nothing but weaning will suffice*—and the entire separation of the child from the breast, is generally soon followed by a progressive subsidence of the sufferings of the patient. But it is not simply on account of the mother, that weaning becomes indispensable, in cases of this kind; the welfare of the infant, also, is intimately concerned. In nearly all instances where lactation produces the pernicious effects just stated, before the regular period of weaning, the secretion of milk is much diminished in quantity, as well as deteriorated in quality; so that it is not only wholly insufficient to supply the wants of the infant, but moreover often decidedly injurious, in its effects on the infant's digestive organs and general state of health.

The foregoing observations refer more particularly to the necessity of weaning at a comparatively early period after the child's birth, when from the mother's feeble and delicate condition, suckling gives rise to symptoms of exhaustion, and nervous disorder. "Many mothers," says Dr. Hall, "are incapable of suckling longer than three or four months, without producing symptoms of undue lactation, or exhaustion. Delicate females who are enfeebled by hæmorrhage during parturition, or who have been freely depleted, and confined to a very simple and innutritious diet, in consequence of some inflammatory affection soon after confinement, frequently suffer much exhaustion from suckling." If, in the early period of lactation, the mother becomes progressively weaker, with loss of appetite, and increasing symptoms of nervous irritation without any obvious cause, we may suspect exhaustion from suckling as the immediate source of the illness; and should this be the case, nothing but an entire separation of the child from the breast will be adequate to restore her health.

It has already been observed above, that suckling is in general continued much longer than is consistent with the welfare either of the mother or the child. On the part of the mother, the effects of unduly protracted lactation are sometimes extremely pernicious. We not unfrequently see women pale, debilitated, and constantly tormented with dyspeptic and nervous affections, suckling their infants for eighteen or twenty months, and occasionally much longer, without suspecting that their sufferings and ill-health, is the result of exhaustion, from the constant drain of the nutritious elements of the blood which is kept up by the suckling. To relieve this exhausted and disordered condition of the system, medical aid is usually resorted to, and tonics, antispasmodics, alteratives, and nourishing diet freely and perseveringly employed

—but always in vain, and often even, with manifest injury. At length, after the mother has been reduced to a state of great feebleness and general disorder of the vital functions, the child is weaned; and now, what might have been effected in a few weeks, by a timely separation of the child from the breast, can hardly be accomplished in many months, by the most judicious and careful remedial management. Thus irremediable constitutional infirmity and nervousness are sometimes produced at an early period of life, which, under a more rational and prudent course of management, in relation to the duration of suckling, might have been entirely avoided.

Many mothers are able to suckle their children until they arrive at the proper period of weaning, without the least inconvenience, who, nevertheless, will suffer very serious derangements of health, when the nursing is extended considerably beyond the time, which nature points out as the proper period for terminating this important function. When lactation is prolonged, as it often is, until it becomes a source of morbid exhaustion, the first manifestations of its injurious influence consist in an obvious increase of debility, attended with disagreeable sensations in the region of the stomach and head. The digestive powers soon become much enfeebled, and various distressing dyspeptic symptoms ensue; the countenance becomes peculiarly pale and languid; severe pains occur in the head, often confined to the posterior part, or to one side, and a tormenting pain also is usually felt, "just below the cartilages of the false ribs on the left side, or directly below the left breast." Connected with these symptoms, a state of chronic hysteria, or extreme and harassing nervousness almost invariably occurs. Palpitation of the heart and alarming paroxysms of nervous agitation come on, at uncertain intervals; more or less cough generally occurs; the mind becomes despondent, irritable, and in aggravated cases, sometimes, decidedly deranged. Added to these symptoms, there is always more or less emaciation; and ultimately night sweats with slight febrile irritation ensues. The bowels are usually torpid. In consequence of the enfeebled state of the digestive powers, nothing but the simplest and mildest articles of food can be tolerated by the stomach. Articles that are not easily digested, or such as are of an irritating character, seldom fail to produce severe pains and disturbance in the head, and various distressing sensations in the stomach and chest. "In this state of things," says Dr. Hall, "the patient is apt to try to support her strength by a generous diet and wine. This, however, is a vain effort. For the tone of the stomach is already enfeebled, and this organ is therefore altogether incapable of bearing the increased burthen thus put upon it; and wine only induces feverishness, or at least a false and temporary appearance of strength.'

I have thus been particular in describing the evil consequences which are apt to result in females of weak digestive powers and nervous temperaments, from unduly protracted suckling, because I am persuaded, that this subject is too much neglected, and that the instances of serious indisposition and suffering from this source of exhaustion, are much more common, than is generally supposed. The proper course of remedial management in such cases, consists in the immediate weaning of the child, in conjunction with the use of a mild, simple, and nutritious diet, and remedies calculated to restore the tone of the digestive organs and improve the alvine secretions.

On the part of the infant, also, suckling when continued much beyond the proper period, is apt to exert a highly injurious influence. It is well known, that after the eleventh or twelfth month, the milk almost invariably becomes diminished in quantity, as well as more or less deteriorated in quality; and in proportion as the lactation is protracted, so will it lose more and more its nutritious and wholesome character. In many instances indeed the milk begins to deteriorate as early as the ninth or tenth month, corresponding in this respect, with the proper period of weaning as it is usually indicated by the progress of dentition. That the child must be liable to sustain injury in its health, when nourished by milk thus depraved is very obvious; and the liability to disease from this source, must of course increase in proportion as the suckling is protracted. Children who are suckled an undue length of time, generally gradually lose their fresh and healthy appearance. The countenance becomes very pale and acquires a languid, fretful and sickly expression. The digestive powers are enfeebled—giving rise to acidity, flatulency, colic, vomiting and diarrhœa. In some instances, the abdomen becomes tumid, firm to the touch and tender, whilst the extremities are progressively emaciating. Strumous swellings are apt to appear on the neck or under the ears; and scabby erruptions on the head and face. It would seem too, that a very decided predisposition to convulsive affections is often created by unduly continued lactation, and Dr. Morton has adduced a number of cases to show that it not only produces a strong predisposition to meningites, but frequently operates as a direct exciting cause of this dangerous malady. He states it as his conviction, founded on experience, "that if children be suckled for an undue length of time, that is, any period beyond nine or ten months, they will be peculiarly liable to be affected with meningites. Or that, should they not become affected with this disease, during or soon after the time that they are thus improperly suckled, they will, nevertheless, acquire therefrom, a predisposition to cephalic disease, at some future period of their lives; and finally, that the same injurious effects, will take place in infants, if suckled by women who have been delivered an undue length of time, although the infants themselves, may not have been at the breast for too long a time."

In some instances, the milk loses its wholesome properties at an early period of lactation, without any very serious or obvious derangement of health in the maternal system. When this occurs, the infant, often, throws up the milk again, soon after nursing, and becomes harassed with colic, griping, acidity and diarrhœa, attended with paleness, debility, emaciation, and frequently with scabby eruptions about the face and head. If the child becomes affected in this manner, when nourished exclusively at the breast, we may presume, that the milk has become depraved and injurious to its digestive organs. If any doubt exist as to the agency of the milk in the production of the disorder, the breast should be withheld from the child as long as can be done without any particular inconvenience to the mother, and artificial nourishment, or the milk of a nurse substituted. If the mother's milk has been the cause of the child's illness, an obvious abatement of the symptoms will soon take place; and should this occur, the child ought to be gradually entirely separated from the maternal breast.

Mental inquietude, deep grief or sorrow, and other violent affections of the mind, have a strong tendency to deprave the milk. Women of a very nervous habit and an irritable temper, are peculiarly liable to those mental perturbations which are apt to deteriorate this nutrient secretion. "Those mothers," says Dr. Struve, "who are so unfortunately situated that they cannot avoid provocation, grief, or sorrow, as well as others who possess an irrascible and bilious temperament, or are subject to great nervous debility, accompanied by great susceptibility of every stimulus, will confer no benefits on their children by presenting them with a corrupted milk, which cannot fail to injure their health, and lay the foundation of fatal maladies."

The recurrence of the menses, during lactation, exerts, in many cases, a decidedly prejudicial influence on the properties of the milk, and often renders weaning necessary, long before the usual period of separating the child from the breast. I have, in several instances, where menstruation had returned as early as the sixth month, known the child to become extremely ill, evidently caused by the deteriorated character of the milk, in consequence of the renovated menstrual function, as was demonstrated by the speedy return of health, after weaning was accomplished. The reappearance of the menstrual evacuation, moreover, renders the lactescent female more liable to the recurrence of *pregnancy*—a con dition which invariably lessens the quantity of the milk, and in some instances deteriorates its quality. Neither the appearance of the menses, nor the occurrence of pregnancy during lactation, however, can be taken as a positive and constant indication of the propriety or necessity of weaning. Occasionally, infants are kept at the breast, while the catamenia are regularly recurring, and during the early period of pregnancy, without receiving the slightest apparent injury. The reverse nevertheless frequently takes place, and weaning becomes indispensable to the welfare of the infant. When therefore the mother finds the child becoming sickly, feeble, and annoyed with disorder of the stomach and bowels, after menstruation has returned, or after she finds herself in a state of pregnancy, and relief is not obtained, in due time, from the use of appropriate remedial means, the child ought to be gradually weaned. "Should a woman," says Dr. Morton, "with an infant at the breast, again become pregnant, one of two things will usually take place; either she will miscarry, or her milk will become impoverished in quality and diminished in quantity. It was not intended by nature that the processes of pregnancy and lactation should go on simultaneously; but, on the contrary, that the one should commence when the other had terminated; and experience sufficiently proves, that they will not proceed well together: the reason of which, as it appears to me, may be easily given. During pregnancy, and particularly during the latter periods, the vessels of the womb gradually enlarge, and a much greater quantity of blood than usual is determined to that organ for the increase and perfection of the embryo, and its appendages; which after delivery becomes transferred to the breasts to supply the material for the secretion of the milk: but if during pregnancy, lactation be also persevered in, the blood becomes directed, at the same time, to two different parts of the body, somewhat remote from each other; and hence, neither is likely to receive its due proportion of this vital fluid, and consequently the functions of one or the other, or of both, are liable to become impeded or suspended. If the breasts continue to receive a sufficient quantity of blood, the secretion of milk goes on properly, but the womb is deprived of its necessary supply; the embryo, in consequence, languishes and dies, and, becoming an extraneous body, is thrown off, producing abortion: while, on the other hand, should the womb still obtain its due proportion of blood, the breasts are robbed of it, and the secretion of milk, if not altogether suppressed, is rendered either deficient in quantity or deteriorated in quality."

If from causes of this kind, it occasionally becomes necessary to separate the child from the breast sooner than would otherwise be deemed proper, circumstances may also occur, which will render it expedient to protract the duration of suckling, beyond the period that might be indicated by the progress of dentition, or the mere age of the infant. The child may be laboring under some disease, or it may be in a very debilitated condition from previous disease—or its digestive organs may be weak and irritable, at the regular period of weaning. Under such circumstances, it would undoubtedly be improper to wean the child, unless good reasons existed for believing that the milk had become decidedly unwholesome. The bland and congenial nourishment obtained at the breast, could hardly be substituted by the mildest artificial food, without retarding the progress of the child's convalescence; and in a very debilitated condition of its digestive powers, such a transition could hardly fail to give rise to very serious affections. Children should never be weaned when they are sick, unless the indisposition is found to have been produced or to be supported by an unwholesome state of the milk (Dewees).

Some attention should also be paid to the *season* of the year, in fixing on the period of weaning. In general, weaning may be accomplished with less inconvenience and risk of unpleasant consequences to the child, during the mild months of April, May, September, October, and the early part of November, than whilst the weather is inclement. Exercise in the open air, is always highly beneficial to the child, at the time of weaning. It tends, in no inconsiderable degree, to fortify the system of the child, and to enable its digestive organs to bear without inconvenience, the change of nourishment. In consequence of the peculiar tendency of warm weather to excite cholera infantum, particularly in cities or large towns, it is in general inexpedient to separate children from the breast, during the months of June, July and August; for it has been abundantly ascertained that the transition from the maternal milk to an exclusive artificial nourishment, during this season, has a decided tendency to favor the occurrence of this dangerous malady. Nevertheless, should the child be manifestly suffering from a deteriorated state of the milk, it ought to be separated from the breast, without any regard to season; for a bad condition of the milk, would doubtless, be more injurious in this respect than a suitable artificial nourishment.

CHAPTER VIII.

CLEANLINESS. WASHING. BATHING.

The skin is one of the most extensive and important emunctories of the human system. Through its countless pores, a large portion of the secrementitious elements of the body are continually passing. Whatever interferes with the regular action of these emunctories, or impedes the free elimination of the perspirable materials of the blood, becomes a source of more or less serious disease; and on the other hand, every thing that tends to maintain a healthy activity of this function, contributes, very largely to the preservation of a healthful condition of the system.

Cleanliness is a most important requisite for keeping up a healthy state of the skin. When ablution is neglected or inadequately attended to, particles of perspirable matter, together with the dust which settles on the cuticle, insinuate themselves into the pores, and spread a film of impurities over the whole surface. This, not only interferes with the regular progress of the cutaneous transpiration, but tends, moreover, in no slight degree, to disorder the healthy structure of the cuticle and cutis, and, ultimately, to give rise to protracted and dangerous constitutional maladies. Children who are neglected in this respect, are much more apt to suffer severely from the contagious eruptive fevers, incident to childhood, than those whose skin is kept clean and pure. The tendency of a foul state of the skin, to give rise to various chronic cutaneous disorders, of a loathsome and harassing character, is well known. Itch, scabby eruptions on various parts of the body, tetrous affections, painful and offensive excoriations and herpetic disorders, are often the result of uncleanliness of the body. The general health, too, is liable to be impaired, by an habitually unclean state of the surface; and it unquestionably predisposes the system to the occurrence of indigestion, and other forms of gastric and intestinal disease. The agreeable feelings which entire cleanliness is calculated to produce, as well as the excellent moral influence which it is capable of exerting on the mind, are, in themselves, of sufficient moment to claim for it the most solicitous attention. Children, who are early accustomed to the comfortable and healthful impressions of washing and bathing, will rarely, in after life, neglect the observance of personal cleanliness; and those, on the contrary, who are neglected, in this respect, during childhood, will seldom manifest a proper regard for this physical virtue, in the subsequent stages of their lives.

Infants ought to be thoroughly washed over the whole surface of the body once every day until they are weaned. After this period it will in general be sufficient to make the ablutions once every other day. The water ought to be *warm* during the first three or four months. It should then be reduced to *lukewarm*, and continued at this temperature until the progress of primary dentition is completed, when it ought to be still further reduced until it excites a decided sensation of coolness when first applied to the body. The washing should be performed with a soft sponge or a piece of soft linen; and particular care taken to remove the impurities which are apt to remain in the folds of the skin and joints. In addition to this indispensable means of preserving a pure and healthful condition of the skin, *bathing* must not be neglected. The bath ought to be used every other day, during lactation, and afterwards at least twice every week. The regular use of the bath seldom fails to exert a highly salutary influence on the system, and ought never to be regarded as superfluous even as a means of cleanliness, however carefully the general ablutions be attended to. Until the end of the third year at least, the bath ought to be tepid; and for feeble and sickly children it will be proper to continue the use of *tepid water* for this purpose to a more advanced age. When the child is healthy and vigorous, however, the *tepid*, should be gradually substituted by the *cool* bath after the third year; though injury is, probably, much more frequently done, by too early a transition to the *cool*, than by too long-continued a use of the tepid bath. In using the bath, the child's body ought to be immersed up to the shoulders or neck. The practice of immersing only the lower half of the body in the bath, is decidedly objectionable. The upper part of the chest being wet, and exposed to the cooler temperature of the air, generally feels chilly or uncomfortably cold, while thus partially immersed in the tepid water—a situation which is well calculated to give rise to catarrhal and other inflammatory affections of the respiratory organs.

The time during which it may be proper to remain in the bath must be varied according to the age of the child. For the first four or five weeks, the infant should not be kept beyond two or three minutes in the bath—and the duration must, afterwards, be gradually prolonged, as the child advances in age, until it extends to twelve or fifteen minutes—a period which a child may, with propriety, be allowed to spend in the bath after it has attained the age of four years.

It is to be particularly observed, that children should never be permitted to enter the bath while they are in a state of free perspiration from exercise—a precaution which is especially important when the water is below the tepid temperature.

The best time for bathing children is about two hours after breakfast or dinner. Infants should not be put in the bath immediately after having been freely nourished at the breast. To obviate the risk of taking cold, the bathing ought to be conducted in a room heated to a comfortable degree of temperature; and on removing the child from the bath, it should, without delay, be wiped perfectly dry, and immediately invested in warm and dry linen. "Infants may then be placed in bed, which in winter should be previously warmed; and they will generally fall into a refreshing sleep, attended with a gentle and beneficial perspiration. Children, further advanced in age, who have already been accustomed to the cool bath, need not be put to bed, but rather induced to take exercise after it in the open air, though much depends here on the circumstance, whether they have been bathed in warm, cool, or cold water. If warm water has been used, the child should be immediately put to bed; for nothing is more apt to predispose to the injurious effects of cold than warm bathing." In that general tendency to increased perspiration which is produced by the tepid bath, every draught of air, and especially the sudden removal to a cold atmosphere, is peculiarly apt to give rise to catarrhal and other febrile affections. After cool-bathing, on the contrary, no apprehensions of injurious consequences need be entertained from exposure to the open air; and active exercise, after coming out of such a bath, exerts, in general, a very salutary influence on the health and feelings of the individual (Struve). "In rough weather, however, it is more advisable to keep the young party, after bathing, for half an hour in the nursery, where they may run about according to their own pleasure, and then enjoy the fresh air, but with strict injunctions not to sit down on the grass."*

Some writers advocate the use of cool and even cold water, both for washing and bathing infants; and many mothers pursue this practice under the fallacious idea that it tends to invigorate the infantile system and fortify it early against the injurious influence of cold and sudden changes of temperature. Reference is usually made to the custom, in some countries, of plunging newborn infants into cold water, as an evidence of the propriety and usefulness of this practice; and it cannot be doubted, that of those, whose strong constitutional energies enable them to pass safely through this severe process of hardening, many may ultimately be benefited by its inuring tendency. It is well known, however, that many infants perish, at an early period, in consequence of this cruel and unnatural exposure; and that, in general, those only who are endowed with vigorous powers of life, are able to sustain its depressing influence, without injurious consequences. Warmth is peculiarly congenial to the physical habits and sensibilities of the infantile system. Until birth, the infant is surrounded by a medium of the temperature of its own body; and there can be no doubt, that its sensibility to cold, for some time after birth, must be such as to render its impressions very distressing and painful. Cold is a sedative or debilitating agent, in its direct and essential operation on the animal system. The increased activity which sometimes follows the application of cold, is caused by the reaction of the vital powers, after their temporary depression; but when the system is feeble, the depression caused by the cold, is often so great, that the powers of life are incapable of developing a healthy degree of reaction, and more or less permanent prostration and disorder of the system, is the inevitable result. Feeble and sickly children ought to be as little exposed to low temperature as possible, until, by a judicious course of management, their systems are gradually inured to its chilling and depressing influence. The use of cold or even cool water, for washing and bathing very young infants of weak constitutional powers, is frequently attended with the most unhappy consequences, and always, with a great deal of suffering. Even robust and vigorous infants often manifest, by their screams, and their protracted paleness, shrunken appearance, and tremor of their bodies, the painful and depressing effects produced by being washed in cold water. Instead of being invigorated, they are frequently enfeebled by this practice; and before they become inured to the impressions of the cold or cool water, serious catarrhal, febrile, or bowel affections may be caused by its tendency to check the perspiration, destroy the regular balance of the circulation, and depress the vital powers. By the use of tepid water, on the contrary, the cutaneous exhalents are gently excited, without the risk of suspending their action, or of causing a sudden and dangerous revulsion of blood from the surface to the internal organs; at the same time, that the congenial temperature of the bath, produces an agreeable and salutary excitement throughout the whole system. In urging the propriety of using *tepid*, in preference to *cool* water, however, it is proper to observe that the employment of *decidedly warm* water for bathing children, is not, in general, advisable, except during the first few weeks after birth, or as a remedial agent, in certain states of feebleness and disease. *Warm* bathing, by its tendency to over excite the exhalents of the skin, is apt to produce a state of general relaxation and languor, unfavorable to the regular performance of the vital functions, and to predispose the system, very strongly, to the injurious influence of cold. Children, who are often bathed in warm water, are apt to acquire a susceptibility to the impressions of low temperature, which renders them much more liable to catarrhal and other affections, from exposure to the open and cold air, than those who are habitually bathed in tepid or lukewarm water. As a general rule, the temperature of the bath ought to be about 98° of Fahrenheit during the first ten or twelve days. It should then be progressively reduced, about one degree every month, until the end of the first year, and continued at this degree of warmth until the completion of the second year. After this period the temperature must be further lowered, though in a very gradual manner, until about the end of the third year the bath creates a sensation of decided coolness. In relation to this subject, however, regard must be had to the particular condition of the child with regard to its constitutional vigor, predispositions, and health. Weak and sickly children, generally require a greater degree of warmth, and a more cautious transition to cool bathing than such as are robust and healthy; and this observation is especially applicable to those who are strongly predisposed to bowel complaints, or to cutaneous eruptions.

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* On the Domestic Education of Children. By C. A. Struve, M. D.

[The importance of cleanliness cannot be too frequently insisted on, and an apology is not called for, in reference to a further notice of it. There can be no doubt, that a large share of the cutaneous disease of infancy is induced by imperfect washing of the whole surface of the new-born child. Nor is it less certain, that much evil follows very rough efforts to detach all foreign matter from the skin.

The entire removal of the sebaceous coating of the tender surface, is indispensable to the healthful action of the capillaries. And while this is often well attended to, in respect of more prominent parts, nurses frequently overlook the axilla and groin, and, as a consequence, they are sadly annoyed by excoriations that are frequently tedious and troublesome. An infant should not be dressed until every portion of this fatty matter has been gently, yet effectually removed, in the way already pointed out. If this be carefully attended to, the liability to infantile skin-disease will be greatly lessened.

The practice of dipping new-born infants in cold water, daily, from the time of birth, on the plea of hardening their constitutions, might possibly suit the Greenlanders, but is not adapted to this country. We do not say that no experiments of this kind have succeeded, but we do know, that infants have been killed by this expedient. It is a doubtful and dangerous experiment, wholly uncalled for by the real wants of our nature. We have no reason to believe that infants were subjected to such *preventive* treatment in the days of antideluvian simplicity; and regard the cold-bath practice in the light of a *remedial* appliance, to be regulated by competent medical advice.]

BOOK II.

OF THE DISEASES OF CHILDREN.

CHAPTER I.

OF SYNCOPE, ASPHYXIA, AND IMPERFECT RESPIRATION.

In the majority of instances, the child begins to breathe and cry, and the various functions of independent life commence their circle of action, as soon as it is ushered into the world. This, however, is not always the case. Many children manifest no signs of animation when born, in whom, nevertheless, the spark of life still lingers, and may, occasionally, be re-excited by prompt and judicious management. This state of apparent death, may depend either on an apoplectic condition, or on syncope, or on great feebleness and exhaustion of the vital powers. When it depends on an apoplectic state of the brain, the infant's countenance exhibits a livid or deep red and bloated appearance—the prolabia are purple or almost black, the eyes prominent, and the surface of the body warm, reddish and somewhat tense. This condition generally arises from a tedious and difficult passage of the infant's head through the pelvis, and particularly from the umbilical cord being wound tightly round the child's neck, impeding the return of the blood from the head, and thereby causing inordinate sanguineous congestion in the brain. This apoplectic condition is produced, also, by the unceasing and vehement uterine contraction, which is often excited by *ergot;* for infants who are still-born, or in a state of asphyxia, after the efficient administration of this substance, generally exhibit very strong marks of excessive vascular turgescence in the head. Indeed, it is difficult to conceive, how a long-continued and powerful action of the uterus could fail to produce dangerous or fatal sanguineous congestion in the brain. The water, by which the fœtus is surrounded, being wholly incompressible, the entire force of pressure exerted by the womb, must necessarily act directly upon the child, and cause so great a compression of the more yielding parts of the body, as nearly to arrest the circulation in them—the inevitable consequence of which must be, an excessive accumulation in the brain, heart and lungs, parts that are protected against external pressure, by the bony walls which enclose them. This is probably the ordinary manner in which ergot, when exhibited under circumstances unfavorable to the speedy completion of labor, proves injurious or fatal to infants.

In some instances of this kind, the child is born without any manifestations of life whatever. Its face is swollen and livid, the body flaccid, and the navel string has ceased to pulsate. Although but very little hope can be entertained of recovering an infant in this condition, it ought not to be immediately abandoned without making suitable efforts for the resuscitation of its vital powers. As almost every thing, in such cases, depends on the speedy removal of the congested condition of the brain, the umbilical cord should be immediately cut, and an effort made to strip some blood from it with the fingers. It is but very rarely, however, that any blood can be obtained in this way, and never after the heart has ceased to pulsate. I think it probable, that a sufficient quantity of blood might be abstracted, by dividing the cord within about an inch of the umbilicus, and applying a wide-mouthed cupping-glass, furnished with an exhausting pump, over the navel and its short portion of cord. By exhausting the cup, the blood would, doubtless, flow from the extremity of the cord, even perhaps, after the heart had ceased to act; and it appears to me not unlikely, that a considerable influence might, thus, be exerted in re-exciting the circulation. The child's head should be supported in an elevated position, and the inferior parts of its body wrapped in dry and warm flannel. In conjunction with these measures, an effort should be made to excite the respiratory function, by artificial inflation of the lungs, and compression of the thorax with the hands, so as to imitate the alternate acts of inspiration and expiration. In inflating the lungs, the accoucheur must apply his mouth to that of the infant, at the same time closing its nostrils, and endeavor, by a moderate but uniform force of insufflation, to fill its lungs with air. During this effort, the child's chest should be a little raised, and its head slightly thrown backwards, to facilitate the entrance of the air into the larynx. Dr. Dewees says, that the attempt to expand the lungs must be by a "*forcible*" insufflation—an advice which may readily lead to very unfortunate consequences. It appears, from a series of experiments, made a few years ago in France, on animals, and from observations relative to the human subject, that no very great force of insufflation is necessary, to rupture the delicate air cells, and cause a fatal emphysema of the pulmonary structure. In sheep, and in the dead human subject, the air cells were ruptured by a force of insufflation, not greater than that which may be made by a person of ordinary respiratory vigor, without any very violent effort.

It is not improbable, I think, that "forcible" efforts to inflate the lungs of infants born in a state of asphyxia, has often resulted in fatal rupture of the pulmonary air cells. To obviate this very unfortunate accident, the air ought to be thrown into the respiratory passages, through a silk handkerchief folded double, or a fine napkin, laid over the mouth of the infant. This, I am persuaded, is a very useful precaution, and should never be neglected, when artificial inflation of the lungs is attempted. Of the tendency of forcible insufflation to rupture the air cells of the lungs, I had a very striking illustration, a few years ago. I attended a lady in a tedious and rather difficult labor. The child was still-born; but I nevertheless made some efforts to effect a resuscitation. I inflated the lungs in the usual way. The child, however, did not recover. A singular tumor situated just above the middle of the left clavicle, induced me to ask permission to examine it with the scalpel. The tumor extended a short distance into the thorax, in following which, I opened the chest. On raising the sternum, I found the superior portion of the left lung in a complete state of emphysema, and a good deal of air diffused under the anterior and lateral surface of the pulmonary pleura. With the exception of the inferior portions, both lungs were crepitous, and appeared to have been well inflated. That the emphysema was the result of rupture of the air cells, caused by the forcible inflation, and not of putrefactive decomposition, I could not doubt; for up to within about two hours of the termination of the labor, the child's motions were distinctly felt both by the mother and myself.

When the umbilical cord continues to pulsate, in infants, born in this apoplectic or oppressed condition, relief may, in general, be speedily obtained, by promptly dividing the cord, and suffering more or less blood to flow from it. When the cord beats vigorously, nothing more is, generally, required for setting the vital functions in play, than the prompt abstraction of blood in this way. As the blood flows, the lividity and turgid state of the countenance, usually, disappear, and in a short time the infant begins to breathe. The efficacy of this measure may, in general, be enhanced, by supporting the infant's head in an elevated position, applying cool water to the scalp, and immersing the inferior extremities and hips in the warm-bath.

When the pulsation of the cord is slow and feeble, inflation of the lungs is frequently requisite, in addition to the abstraction of blood in the way just mentioned, in order to excite the respiratory organs into action. Artificial respiration, however, is very rarely capable of procuring any decided advantage in cases of this kind unless aided by the loss of blood. Whenever the face is turgid and livid, accompanied, as is usually the case, with signs of general sanguineous repletion, bleeding from the divided cord, is a measure of paramount importance. It is proper to observe, however, that in cases unattended with these manifestations of cephalic congestion and general fulness—that is, when the face and body present a pale and shrunken appearance, blood cannot be abstracted without incurring much risk of injury.

Some infants, who are ushered into the world with great rapidity, by a quick succession of vehement parturient contractions, remain for a minute or two without any, or but a few, imperfect respiratory efforts, although they will open their eyes and move their extremities with sufficient activity. A few drops of cold water sprinkled on the chest and abdomen, will instantly cause them to breathe and to cry out lustily. The main point of caution, in cases of this kind, is to avoid tying the cord until its pulsation has ceased, or has become quite feeble. The pulsation, in these cases, is always very strong, and generally continues longer than in ordinary instances. I have known the respiration to become immediately much embarrassed and the face to assume a livid aspect, on the application of a ligature to the cord, while pulsating actively, although the child had previously breathed and cried very strongly.

In all instances where respiration does not ensue, or is embarrassed, immediately after birth, prompt attention should be paid to the speedy removal of the viscid mucus which is usually lodged in the mouth, fauces, and larynx, of new-born infants. In many cases, breathing is much impeded by this cause; and in some instances, the quantity and viscidity of the mucus is so great, as entirely to obstruct the entrance of the air into the lungs. To dislodge this mucus from the fauces, a finger surrounded with a piece of soft linen, should be carefully introduced, and the tenacious slime brought away from the posterior part of the mouth. The child should then be turned with its face downwards, and the body raised higher than the head. In this position, the child's back (between the shoulders) should be patted with the hand, and its body gently shaken, "so as to disengage any mucus that may be lodged in the trachea, and permitting it to flow out of the mouth, by making this the depending part" (Dewees).

Infants are sometimes born in a state of asphyxia, without any signs of cerebral congestion or vascular fulness; the surface of the body being pale, and the face free from the puffiness which occurs in the apoplectic or congestive cases. If, in instances of this kind, the cord continues to pulsate, it must, on no account, be divided, until the pulsation has ceased. The viscid mucus should be immediately removed from the fauces and larynx, in the manner just mentioned; and a little cold brandy, spirits, or even water, dashed on the pit of the stomach. This, almost always, immediately excites the respiratory actions; and nothing further is necessary, until the pulsation of the cord has ceased, when it must be divided, and the child suffered to remain quiet, until its strength is in some degree recruited. Should these measures fail to excite the respiration, which however rarely happens, so long as the cord beats actively, advantage may sometimes be obtained from the application of some volatile stimulant to the nostrils and lips—such as brandy, hartshorn, spirits of camphor, or ether. It will, also, be proper to rub the body and extremities, gently, with dry warm flannels. If, notwithstanding the employment of these means, respiration do not commence, while the pulsation of the cord becomes more and more feeble, or wholly arrested, the chance of ultimate success must be regarded as exceedingly slender. When the pulsation of the umbilical cord has ceased, and the child is flaccid, every effort must be made to keep up the natural temperature of the body, by the external application of warmth, and to excite the respiratory function by artificial inflation. The cord must be divided, and the infant wrapped in dry and heated flannel. I agree, perfectly, with Dr. Dewees, in giving a preference to dry warmth, by heated cloths, over the warm-bath. Experience has convinced me, that the former is a much more efficient means, for imparting warmth and exciting the feeble remains of vitality than the latter. It seems probable that, *water* may, in some degree, counteract the exciting effects of *warmth*, by its strong tendency to abstract the electric fluid from the body. Flannel, being a very imperfect conductor both of electricity and heat, is, doubtless, the best medium, in cases of this kind, for applying warmth to the body. The heated cloths ought to be frequently renewed, so as to keep up a uniform temperature, and their application continued as long as there may be any hope of ultimate success. At the same time that warmth is thus diligently imparted to the infant's body, the efforts to excite respiration by alternately inflating the lungs and compressing the chest, in the way mentioned above, should be regularly and cautiously persisted in until the child begins to breathe, or there is reason to think that all further exertions must necessarily prove fruitless. Infants, in this condition, should not be hastily abandoned. I have in several instances known more than thirty minutes to pass under the employment of these resuscitating means, before the child began to respire; and cases have occurred in which resuscitation was effected after a much longer period of exertion.

Dr. Underwood thinks that the electric influence might be advantageously employed in cases of this kind: and, from the extraordinary tendency of galvanism to excite muscular action, even after the animal functions are entirely abolished, it can scarcely be doubted that much benefit might sometimes be derived from this active and pervading agent. This, however, is one of those means, which though capable perhaps, of doing much good, can very rarely be brought into use, on account of the delay which must necessarily always occur in procuring the apparatus and putting it in action.

Respiration generally commences by a short and deep spasmodic inspiration or sob, which, at first, recurs at considerable intervals, becoming, gradually, more and more frequent and complete, until the respiratory function is established. Occasionally, however, instead of a progressive improvement in the action of the lungs, the respiratory efforts become more and more imperfect, after the first two or three forcible sobs, until the vital actions are entirely arrested, notwithstanding the continued exertions to excite and support them. Sometimes the respiration, when established, is for several hours so feeble, that the slightest fatigue or agitation is apt to arrest it, and exhaust the languid powers of life. In all instances, where a resuscitation has been effected from a state of asphyxia, it is of the utmost consequence to suffer the infant to lie perfectly at rest, for several hours, before it is subjected to the agitation and fatigue of washing and dressing. When the respiration is very feeble, a strict attention to this precaution is indispensable to ultimate success. There can be no doubt, that many infants have died in consequence of the fatigue and prostration caused by washing and dressing, during the very feeble and exhausted condition which often succeeds recovery from a state of apparent death immediately after birth. An instance of this kind occurred to me about six years ago. The infant was born in a state of asphyxia. Its face was neither livid nor bloated, and the cord pulsated feebly. By the employment of the usual resuscitating means, it soon began to breathe, but in a very weak and sobbing manner. I had it wrapped in warm flannel and laid on a bed. By the time I left the room, its breathing had become regular, and it made some feeble attempts to cry. I earnestly enjoined that it should be left perfectly at rest, until I called again. I had not left the house more than an hour, before I was hastily summoned to visit the infant, with a message that it was dying. The child was dead before I arrived. I learned that as soon as I had left the house, the grandmother of the infant insisted that agitation and motion would "stir up life," and proceeded forthwith to wash and dress the infant in no very gentle manner. The immediate result was fatal exhaustion. It is of great importance, also, to continue the external application of warmth until the respiration is fully established, and the child is able to cry out strongly. In applying the heated cloths, however, care should be taken to agitate the child's body as little as possible. Some advantage may be obtained from applying a few drops of warm wine and water to the infant's lips and nostrils; and I have known manifest benefit derived from gently washing the face with a very weak mixture of warm spirits and water.

The preceding observations relative to the prostration which often succeeds recovery from a state of apparent death, are equally applicable to infants born in a very feeble condition, and to the majority of those who are born prematurely. Rest and warmth, in such cases, are all-important requisites for the gradual development of the vital functions. Infants born between the seventh and eighth month, generally remain in a somnolent state, for several weeks, and ought to be as little disturbed by washing, dressing, feeding, or in any other way, as possible. When they are very feeble, it will be most prudent to leave them perfectly at rest, for several days before they are subjected to the fatigue of washing and dressing. Dr. Dewees mentions two children born a little after the sixth month, who were neither washed nor dressed "for many days," and both recovered.

Occasionally, feeble infants—particularly such as are much exhausted in consequence of a partial separation of the placenta or compression of the cord during labor, suddenly sink into a state of apparent death or syncope after respiration has been fully established and every thing seems to go on in a favorable manner. Without any obvious cause the infant becomes pale, cold, flaccid, the breathing very feeble and interrupted, and finally wholly arrested; the countenance shrunk, the eyes fixed and half open, the hands livid, and the pulse extinct (Dewees). This death-like condition usually continues a few minutes, and then gradually passes off, leaving the child in a languid and fretful state for many hours. These attacks are apt to recur at uncertain intervals, "unless the disease be arrested by suitable remedies, or death closes the scene." The few instances of this affection that have come under my notice, were attended with manifest disturbance in the alimentary canal; and Dr. Dewees observes that "a small quantity of very green fluid is almost always discharged from the bowels during the fit." In one of the cases I witnessed, several copious discharges of a thin dark-green matter occurred, immediately after the attack had subsided. The affection is doubtless the result of intestinal irritation, in conjunction with a feeble and irritable condition of the system; and we accordingly find, that the employment of remedies calculated to correct the functions of the liver and intestinal canal, rarely fails to prevent a recurrence of the attack. During the paroxysm, efforts must be made to re-excite the vital powers, by a prompt recourse to external stimulating applications. The child's body should be wrapped in a piece of thick flannel wrung out of hot whiskey or brandy; a little warm water and wine may be thrown into the rectum; and a drop of ether, spirits of camphor, or sharp vinegar, should be applied to its nostrils and lips, and weak sinapisms laid on the soles of the feet. Under the influence of these exciting applications, the suspended functions of life usually return, in a gradual manner, until the action of the heart and lungs are fully re-established. To prevent the recurrence of the affection, recourse must be had to remedies calculated to correct the functions of the liver and alimentary canal. A few minute doses of calomel—that is, from one sixth to a fourth of a grain, given in the evening, and followed on the succeeding morning, by four or five grains of rhubarb, or a teaspoonful of castor oil, generally produces an excellent effect in such cases. Great care must also be taken to prevent the infant from over-distending its stomach with nourishment.

With regard to the proper time for tying the umbilical cord, writers have expressed different opinions. Baudaloque, Denman, White and Dewees, maintain that "we can never safely depart from the rule, that '*the cord is not to be tied until the pulsations of the umbilical arteries have ceased*.'" Mr. Burns, on the other hand, observes, that "when the child is vigorous and cries lustily, there is no occasion of delay in tying of the cord until it has ceased to pulsate." That very serious injury may result to infants from tying the cord, whilst it pulsates *actively*, even when the respiration is fully established, does not admit of a doubt; and, although the cord may, in general, be tied without the slightest unpleasant consequences in vigorous infants breathing freely, after its pulsation has become *decidedly feeble*,—yet, as a general rule, it is unquestionably safest to delay the tying, until the cord has entirely ceased to pulsate. When the cord is tied whilst pulsating strongly, the breathing, sometimes, instantly becomes irregular, catching and feeble, and the countenance turgid and livid. Some years ago, I witnessed a striking instance of the evil effects which may be produced by the premature ligature of the cord. The infant breathed freely and cried out lustily, as soon as it was born. I waited three or four minutes, until the cord pulsated feebly, and then tied it. As soon as the ligature was drawn, the breathing became catching, irregular, and in a few moments almost wholly suspended, and the lips acquired a deep livid hue. I immediately divided the cord below the ligature, but obtained only a few drops of blood from it; and it was with the utmost difficulty, and only in a very gradual manner that the action of the lungs and heart were fully re-established.

Injury may also result to the child, from too long a delay in putting a ligature on the cord, or separating it from the placenta. When the uterus contracts very powerfully soon after the birth of the child, the blood contained in the placenta, may be pressed out of it, as from a sponge, and engorge the vessels of the infant to a degree which may prove highly injurious and even fatal. I am convinced that I have seen several instances of alarming consequences from this cause, after the employment of ergot for hastening the labor. When ergot is given in the latter stage of labor, the womb is apt to contract with great energy upon the placenta, immediately after the expulsion of the infant; and it cannot be doubted that, when this takes place, the blood contained in the placenta must be more or less powerfully forced into the vascular system of the infant. I have known an infant to breathe and cry strongly for a short time, and then, suddenly, on the occurrence of a strong uterine pain or contraction, to fall into an oppressed condition, with a turgid and livid countenance, and feeble, interrupted and suffocative respiration, and a state of apparent insensibility. When, after respiration has been established, and the cord remains united, phenomena of this kind supervene, the cord ought to be immediately divided, and the blood suffered to flow until the symptoms of oppression are removed.

[When infants, bearing about them most signal marks of debility, are born in a state of asphyxia, the case may be regarded as hopeless, or nearly so. And it is only in cases where the parents have no children, and are greatly desirous of having offspring, that we feel urged to make vigorous efforts, despite of such unpromising circumstances. But it not unfrequently happens that very healthful infants, so far as we can judge from exterior signs, are born in a non-respiratory state. All the tokens of suspended animation are present, but these are found in a vigorous frame, void of apparent malformation. Such a state is always encouraging, and prompts to the most untiring efforts to effect resuscitation. And the chief object of this note is to urge on young practitioners the absolute necessity of patient exertion, in the use of all the means known to the profession. It is not enough to put the new-born infant into a warm and stimulating bath, and to inflate the lungs at the same time. This is very well; but the same measure must be reiterated, over and again, for hours, even though the case should continue to wear a discouraging aspect. A physician of considerable repute once attempted to resuscitate a new-born child, and although what he did was very proper, abandoned the case, in despair, and retired. An old lady entered immediately after the doctor had vanished, and applied her finger to the nostrils of the little one, and in an instant sneezing occurred, and then irregular breathing, and the child was at length saved. A few grains of snuff constituted the remedy to which all the credit of the recovery was ascribed. Yet it is probable the previous efforts of the physician prepared the way for the successful action of the errhine, and he might have succeeded with his own efforts, if he had been more persevering.

In respect of tying the cord, it may be well to urge the importance of making the ligature effective. For want of care in this respect, I have known a very troublesome oozing of blood to occur after the separation of the cord. All the embarrassment of such cases may be avoided, by tying so tight as to stop the circulation completely. The process of sloughing, also, will go on and be completed, the better, for this caution.]

CHAPTER II.

OF THE MECONIUM.

The fœcal matter formed in the bowels of infants, before birth, is called *meconium*, and consists of a dark green, yellowish, or party-colored residual substance of a viscid and semi-fluid consistence. When this recrementitious matter is retained in the bowels of the new-born infant, it seldom fails to give rise to intestinal irritation, and more or less general disorder of the system. Exhausting and painful diarrhœa, colic, mucous inflammation of the intestines, obstinate jaundice, convulsions, trismus, induration and enlargement of the mesenteric glands and consequent wasting of the body, disease of the liver, erysipelas with induration of the subcutaneous cellular tissue, not to mention other forms of distressing and dangerous disease, may, it is believed, arise from the irritation occasioned by meconial matter in the alimentary canal. The timely removal of this substance from the bowels, is therefore an object of no small degree of importance. Nature, in general, furnishes the appropriate purgative for this purpose, in the first milk or *colostrum*, secreted in the maternal breasts; and, in many cases, nothing more is necessary for the expulsion of the meconium, than the early application of the infant to its mother's breast. The small portion of fluid which the child, usually, obtains at the breast, during the first nine or ten hours, possesses a decidedly purgative character, and generally causes the entire evacuation of the meconial matter. As the colostrum is formed before the proper milk begins to be secreted, the child ought to be early put to the breast, in order to obtain this purgative fluid, before it becomes diluted and weakened by the milk. When the first suckling is delayed until the breasts are filled with the lacteous secretion, the bowels frequently remain unmoved, and recourse must be had to other means for removing the meconium. There can be no doubt, that, in general, the colostrum is fully sufficient for effecting the expulsion of this substance from the bowels; and, as it was evidently intended for this purpose by the author of nature, it must be regarded as decidedly the most appropriate means for freeing the infant from this source of intestinal irritation and disease. The practice of at once resorting to purgative remedies for the removal of the meconium is highly reprehensible. Instead of putting the child early to the breast, and waiting for the operation of the congenial laxative prepared for it by nature, the almost universal custom is, to introduce some purgative substance into its stomach, such as castor oil, syrup of rhubarb, senna tea, magnesia, sweet oil, manna, or molasses, as soon as the infant is washed and dressed. When we reflect, that the stomach of the new-born infant has as yet never experienced any foreign impressions, and must necessarily be extremely delicate and susceptible, the impropriety of introducing such irritating articles into it, immediately after birth, and before the digestive powers have been brought into action, appears very obvious. The stomach is thus often thrown into a state of severe irritation and functional derangement, which if it does not lead to speedy death, never fails to give rise to a train of extremely harassing consequences. Long experience has fully convinced me, that the distressing dyspeptic affections—the colic, acidity—painful diarrhœa, and general sickly condition, so frequently met with during the first five or six months of infancy, very often have their origin in the gastro-intestinal irritation, caused by the purgatives employed for evacuating the meconium. The purge, given for this purpose, acting on the delicate and highly sensitive stomach, weakens, at once, its digestive energies; the very first nourishment that is taken, is, therefore, but imperfectly digested; more or less fermentation, consequently, occurs in the primæ viæ, by which acid and other irritatory matters are generated, and additional sources of gastric irritation furnished. Unless judicious dietetic and other remedial measures be immediately adopted, a train of painful dyspeptic and general irritative affections will ensue, and soon acquire an ascendency, which can seldom be wholly subdued during the period of infancy.

Although the undue retention of meconial matter in the bowels, is certainly very apt to prove detrimental to the health of the infant, yet it is by no means necessary to resort at once, to the use of purgative remedies for its removal. It was undoubtedly the design of the Creator, that this office should be performed by the *colostrum;* and there need be no harm apprehended, from the delay, which a dependence on this purgative secretion may require. Instead of giving to the infant an artificial laxative, let it be early applied to its mother's breast before the proper milk is secreted, and in nine cases out of ten, adequate purgation will be produced, without the slightest risk of injurious irritation of the stomach and intestinal canal. When the colostrum or first milk fails to produce the desired effect, recourse should, unquestionably, be had to artificial means for expelling the meconium from the bowels; and for this purpose a teaspoonful of molasses diluted with a small portion of warm water, or a solution of manna, or a teaspoonful of cold-pressed castor oil, should be given and repeated until the requisite evacuations have been procured. Rapid and free purging, however, is improper. A moderate action of the bowels, procured by gentle means, is fully adequate, in a great majority of cases, to dislodge and remove the meconial matter in due time. It is of importance, however, to keep up a moderate degree of purgation until the meconium is completely removed; for the retention of even small portions of this substance, may ultimately give rise to very unpleasant consequences.

Sometimes, though very rarely, cases occur in which very great difficulty is experienced in exciting an efficient action of the bowels. In such cases purgative enemata ought to be employed, in conjunction with laxatives administered in full and repeated doses, until the requisite effect is produced. Dr. Dewees, relates a remarkable instance of intestinal torpor of this kind, in which, after frequent doses of castor oil and magnesia with injections of various kinds and the warm bath had been used without any advantage, relief was ultimately obtained from a grain of carbonate of soda administered every fifteen minutes until ten grains were taken. In a few very obstinate cases of this kind, I have succeeded well with a mixture of Ipecacuannha and rhubarb assisted by purgative enemata. Two grains of ipecac. with five grains of powdered rhubarb, may be given every hour until free evacuations are produced. The warm bath will, in general, promote the operation of the purge, and exert a favorable influence on the general system, by its tendency to keep up a regular action of the cutaneous exhalents. The extraordinary torpor of the intestinal canal, which sometimes occurs immediately after birth, depends, probably, in most instances, on cerebral congestion; for I have frequently noticed that those infants who are born with a turgid and livid appearance of the face, and other manifestations of preternatural fullness of the vessels of the head, are much more apt to resist the purgative powers of the colostrum, and to require artificial purgations for the removal of the meconial matter, than such as are free from symptoms of cerebral congestion. Immersing the legs and lower portions of the abdomen in a bath, raised to as high a temperature as the infant can bear, without pain, at the same time that a piece of flannel wet with cold water is applied to the top of the head, frequently has an obvious effect in facilitating the operation of the purgatives that may be given in such cases. An instance which quite recently came under my notice has convinced me, that much advantage may sometimes be derived from this mode of management, where there is difficulty encountered from intestinal torpor in procuring the evacuations of the meconium. The infant had taken three teaspoonfuls of castor oil with ten grains of rhubarb in conjunction with the repeated use of injections without the desired effect. Thirty hours after birth no alvine evacuation had taken place. The little patient lay in a state of partial stupor; its abdomen was distended and evidently very sore to pressure. In this state the lower parts of its body were placed in warm water, while cold applications were made to the head. In less than five minutes after these measures were resorted to the bowels began to act, and four or five copious evacuations ensued in the course of three or four hours.

CHAPTER III.

ON THE TONGUE-TIE.

It frequently happens that the tongue of infants is so tied down, and restrained in its actions by a preternatural conformation of its frænum, that sucking is rendered extremely difficult, and, if it be not remedied, the power of articulating words, at a more advanced age greatly embarrassed.

In the majority of instances, the part which ties down the tongue consists of a thin transparent membrane, extending from the fleshy part of the frænum to near the extremity of the tongue. Dr. Dewees considers this transparent, membranous production as an adventitious formation, wholly distinct from the proper substance of the frænum. It appears to me, however, to be a mere membranous prolongation of, and perfectly continuous with the structure of the frænum. In some instances, instead of this membranous prolongation, the thick and fleshy frænum itself is extended forwards in the same way, so as to confine the tongue and embarrass its actions. When the tongue is in this condition, the infant is incapable of elevating it, or protruding it beyond the lips; sucking is performed with great difficulty, and attended with a peculiar "clucking" noise in the fauces. When the infant attempts to suck, the nipple is constantly slipping from its lips, from an inability to grasp it firmly with the tongue. It alternately seizes the nipple, and after a few imperfect efforts, lets it slip again, until it becomes fatigued and irritated with its fruitless exertions, and begins to fret and cry.

When the portion of the frænum which restrains the actions of the tongue in this manner, is *membranous*, it ought, of course, to be immediately divided. According to my own experience, a pair of small blunt-pointed scissors is the most convenient and safe instrument for dividing this membrane. Dr. Dewees, however, prefers a gum lancet for this purpose. The child must be taken into a good light, and laid across the nurse's lap with its face upwards. In this position the operator should insinuate the extremity of the forefinger of the left hand, between the side of the tongue and the corresponding portion of gums, and push the tongue upwards, whilst with the thumb of the same hand the lower jaw is depressed. The frænum may thus, in general be exposed to view, and the stretched membrane divided by one stroke of the scissors or gum lancet. Crying often facilitates the operation considerably, by exposing the membrane freely and putting it on the stretch. There is seldom more than a few drops of blood discharged from the divided membrane. By carelessness and with improper instruments, however, very serious mischief has been done, even in cases of this kind. About twenty years ago I witnessed an instance, where a young physician, in endeavoring to divide the membranous portion of the frænum, with a pair of sharp-pointed scissors, pierced a blood vessel under the tongue, which occasioned an extremely alarming hæmorrage. Just as he was about clipping the membrane, the infant suddenly threw its head upwards, and plunged the points of the scissors in, under the tongue. Sharp-pointed instruments ought never to be used for this purpose. No one can be entirely secure against accidents of this kind, in the sudden and active struggles which infants are apt to make during the operation.

When the tongue is tied down, by the proper, fleshy frænum extending too near its extremity, nothing can, with propriety, be done towards remedying the evil. Dr. Dewees, has "never ventured to do any thing in cases of this kind." This variety of the tongue-tie is indeed very rarely so great, as to give rise to any serious difficulty of sucking; and the advantages to be gained from a division of the frænum, are by no means adequate to justify an operation attended with so much risk of alarming consequences. Very alarming and even fatal hæmorrage has been the result of this operation, and authors mention convulsions and "swallowing of the tongue," as occasional consequences.

CHAPTER IV.

OF THE INFLAMMATION AND SWELLING OF THE BREASTS OF NEW-BORN INFANTS.

New-born infants are liable to a singular inflammation and enlargement of the breasts, which though very rarely attended with any serious consequences when properly managed, has often been converted into a very painful and dangerous affection by the ignorant and rude officiousness of nurses and others. The common opinion among mothers and nurses, is that these swellings arise from the accumulation of milk in the infant's breast, and, "that it must be squeezed or milked out, that they may be cured." Every effort is accordingly made, by squeezing, sucking, pressing, &c. to extract the supposed fluid, and as no milk can be obtained, the inflammation which often follows this rude treatment, is usually ascribed to the retention of the milk in the breast, and considered as a direct proof of the correctness of this opinion. I have met with several instances, in which this preposterous and highly injurious practice, brought on violent inflammation, which soon terminated in extensive suppuration of the breast, and in one case—a female infant, both breasts were entirely destroyed.

These swellings come on immediately after birth; and it has been supposed, though I think erroneously, that they are generally formed before the infant is born. They are somewhat tense, elastic, and firm, and appear to consist of a moderate degree of inflammation of the cellular membrane with serous infiltration into this tissue. When the inflammation is aggravated, it extends itself to the mammæ, and the skin becomes purplish over the central parts of the tumor. Occasionally, though, indeed, very rarely, the inflammation, even under a proper course of management, becomes severe and continues for five or six days before it begins to subside. I have, however, never known a case of this kind to terminate in suppuration and abscess, except where the inflammation was aggravated by rough handling in the commencement.

In moderate cases Dr. Dewees applies nothing more than "a piece of linen moistened with a little sweet oil;" and where the swelling and inflammation are considerable, he recommends the application of a bread-and-milk poultice, renewed every three or four hours. These are doubtless appropriate and useful remedies; but it has appeared to me, that in the ordinary cases of this affection, a weak solution of the muriate of ammonia in vinegar and water—in the proportion of a drachm of the ammonia, to four ounces of water with the same quantity of common vinegar, acts much more promptly and certainly in reducing the swelling and inflammation, than either sweet oil or emolient poultices. The solution ought to be applied warm, by moistening pieces of linen with it, and laying them over the affected parts. I have seldom used any other application than this one, even where there was a considerable degree of inflammation. When the swelling and inflammation become severe, a few leeches, applied to the parts, succeeded by warm emolient poultices, will in general prevent the occurrence of suppuration.

[The abominable custom of squeezing the infantile breast, is one that should be reprobated, in the hearing of nurses, everywhere. I have known some of these meddlers to insinuate the ignorance of physicians touching this cruel expedient, simply because they were intolerant of it. That it can do no good, is very certain. That it sometimes does harm, is equally obvious. I was once called upon to treat a little sufferer for a large abscess, formed by the officious intermeddling of its nurse, who could philosophise considerably, in her way, on the mighty importance of squeezing out the milk, or something else.

The treatment suggested for the removal of the swellings will usually suffice. I have found warm water an excellent application. It should be applied frequently, care being taken to correct the stomach and bowels, which are generally more or less deranged.

If there be a scrofulous taint in the system, it may be roused into action by the violence offered to the breast. If there be a suspicion, well-founded in this regard, it will be proper to anoint the parts with cod-liver oil, twice a day. This application, apart from its tendency to correct the taint referred to, is quite soothing to the injured breast.]

CHAPTER V.

OF INFLAMMATION AND ULCERATION OF THE NAVEL.

Inflammation and consequent ulceration about the navel is a frequent occurrence during the first nine or ten days after birth. This may arise from irritation occasioned by rude management in washing and dressing the navel, before the cord has been thrown off; or it may be the result of a slow and imperfect separation of the cord, in consequence of which it remains attached by a thin and firm filament and prevents the healing of the navel. Frequently, too, it arises from deficient attention to cleanliness, on the first washing of the infant; for if the white caseous matter, which is found deposited on its skin, be not carefully washed off from about the umbilicus, it soon acquires a very irritating character, and gives rise to inflammation and excoriation of the navel. This, I am well satisfied is by far the most common source of this disagreeable affection of the navel. Children who are not properly freed of this peculiar caseous deposition, where it occurs in abundance, almost invariably suffer more or less irritation and inflammation about the navel. Of the tendency of this white matter, to inflame and excoriate, the skin, when not properly removed, we often have abundant evidence on various parts of the body—particularly in the folds of the skin about the neck, joints, nates and groins.

When the navel becomes irritated and inflamed, it soon acquires a deep red, excoriated and fungoid condition, discharging a thin, offensive and purulent matter, and evidently causes much suffering and uneasiness to the infant. In some instances, the navel presents an elevated ulcerous surface, with an inflamed condition of the surrounding skin, and a copious discharge of thin irritating matter; in other cases, the central part of the navel shoots up a kind of fungous excrescence, of a dark-red and excoriated appearance, with but little surrounding inflammation or actual ulceration. This fungoid tumor sometimes assumes a button-like form, with a narrow base, and a round expanded head like a cherry; in other cases, the tumor is broad at the base, tapering towards the top, or exhibiting nearly a cylindric form.

When the navel becomes excoriated or ulcerous and discharges matter, while the cord remains attached by a filament, the simple division of this slight connexion will often suffice to arrest the progress of the ulceration, and dispose the navel to cicatrize. Whenever the cord is so far separated as to retain only a simple filamentous connection with the umbilicus, the separation ought to be completed by clipping the filament with a pair of scissors, whether there be inflammation and ulceration or not; for if this partial connection is suffered to continue after the usual period of separation, it, of course, prevents the healing, and almost invariably causes severe inflammation and ulceration of the navel.

When the fungoid little tumor in the bottom of the umbilical cavity has a narrow base, it may, in general, be speedily removed by passing a ligature round the pedicle, and drawing it sufficiently tight to arrest the circulation, without cutting into its substance. A strong silk thread will answer very well for this purpose. In the course of a few days, the tumor, usually, drops off, after which the part should be dressed with saturnine ointment, spread upon lint. Should the fungus, however, shoot up again, it must be repressed by astringent applications, or destroyed with one of the milder escarotic remedies. I have found the root of the *sanguinaria canadensis* very finely powdered, an excellent escarotic in cases of this kind. A small portion of the powder should be put on the fungus, once or twice daily, and covered with lint spread over with a little lead ointment. When the surface and margin of the umbilical cavity are excoriated, and the discharge of matter is copious, advantage may be obtained from the occasional application of a solution of sugar of lead, or what is better, a weak decoction of oak bark.

In cases where the tumor is broad at the base, and where, of course, ligatures are inapplicable, recourse must be had to suitable astringents and escarotics. Dr. Dewees recommends "a pretty strong solution of the nitrate of silver," applied by means of a camel hair pencil, "and repeated until the part heals." The nitrate of silver is an excellent escarotic where the surface of the tumor is ulcerated or raw and spongy. In some instances, however, these excrescences are of rather a firm texture, and covered with a fine membrane—and in such cases, this escarotic is always extremely slow in destroying the tumor. I have occasionally used a strong solution of the sulphate of copper, with a satisfactory result in instances of this kind. One drachm of the sulphate should be dissolved in an ounce of water, and applied twice daily by means of a camel-hair pencil or a dossil of lint. We may frequently reduce these tumors without any escarotic applications, by means of strong astringents constantly applied, as is often done with hæmorrhoidal excrescences. Very finely pulverized oak bark, or Aleppo galls, sprinkled on the tumors, will sometimes cause them to shrink, at the same time that it tends to subdue the surrounding inflammation and to arrest the purulent discharge from the umbilical cavity. In the last case of this kind which occurred to me, I directed the nurse to drop a pinch of oak-bark powder, upon the excrescence thrice daily, and to wash the parts carefully with lukwarm water, every morning and evening; and the result was perfectly satisfactory.

When the navel presents an elevated, ulcerous surface, we may often do much good by touching the ulcerated part very lightly with lunar caustic, and applying saturnine ointment, spread on lint, over it. If there is much inflammation of the navel and adjacent parts, a soft poultice made with lead-water and crumbs of bread, forms an excellent application. A solution of the sulphate of copper, in the proportion of ten grains to an ounce of water, may be applied with much advantage, when there is superficial ulceration, without much inflammation. It should be applied once or twice daily, and the part afterwards covered with lead ointment. Sprinkling the ulcerated surface with white lead, or with powdered oak bark or galls, will, in slight cases, frequently restore the parts to a healthy condition, without any other applications. I have seen prompt and very decided benefit derived, in a very aggravated case of ulcerated navel, from washing the part, twice daily, with a decoction of the wild indigo root, (*baptisia tinctoria*). The best mode of applying this article, however, is in the form of a liniment, made by slowly simmering the coarsely powdered root in cream, and afterwards squeezing it through a thick piece of linen or flannel. This should be applied with a soft pencil or feather, three or four times daily; or a piece of lint may be moistened with it, and laid over the ulcerated surface. I have repeatedly applied this liniment, to excoriated and ulcerated nipples, and generally with great advantage.

Cleanliness is an important observance in cases of this kind. Whatever applications may be made, the parts should be carefully washed with lukewarm water, at least twice daily, and where the discharge is particularly offensive, or copious, the parts immediately surrounding the umbilical cavity should be washed or carefully wiped clean, with a soft piece of linen wrung out of warm water, repeatedly during the day.

CHAPTER VI.

OF THE JAUNDICE OF INFANTS.

NEWLY-BORN infants are liable to an icteric state of the skin which though generally of a very slight and transient character, requiring little or no attention, sometimes assumes a degree of violence and obstinacy which calls for prompt and active remedial measures.

In a great majority of infants, this yellowness of the skin comes on within three or four days after birth, unattended by any manifestations of indisposition; and after having remained stationary, for a few days, gradually disappears, without any unpleasant consequences. This peculiar discoloration of the skin is, generally, regarded as wholly distinct from jaundice, and altogether independent of hepatic derangement, or deposition of bilious matter under the cuticle. "It is difficult," observes Dr. Dewees, "to say, to what this yellow tinge may be owing; certain it is, it cannot be attributed to the presence of bile, since neither the urine nor the white of the eyes assume the yellow hue." It may be doubted, however, whether either of these facts can with propriety be regarded, as "certain" evidence, that the yellowness in question, is independent of bilious matter, since a temporary secretion of the carbonaceous matter which during fœtal life is secreted by the liver, may it is presumed, take place into the rete-mucosum without showing itself either in the urine or in the eyes. Nor does the assertion, that the urine is always free of bilious matter accord with my own observations; for since my attention has been particularly directed to this subject, I have not met with one instance, where the urine did not acquire a slight bilious hue, about the time the yellowness of the skin was going off, although previously of a perfectly natural color. The liver appears to be the principal depurating organ, during the uterine stage of life. As soon as the infant is born, however, a large share of this office is transferred to the lungs and the skin. The skin at the same time, suddenly becomes highly engorged with blood, as is manifested by the redness and fulness which usually occurs a short time after birth.—It becomes the principal seat of sensibility and sensation, and its transpiratory function, is for the first few days, performed in a feeble and imperfect manner. It seems probable, therefore, that whilst these changes in the excretory functions are going on, the blood may become slightly charged with recrementitious matter of a bilious or carbonaceous character, and that in the irritable and congested condition of the skin to which we have just referred, a portion of this matter may be deposited on the rete-mucosum or cutis, without any actual morbid derangements either of the liver, or of the general system.

When the infant does not become restless and fretful and takes its nourishment freely, and the alvine discharges are manifestly colored with bile, this yellowness of the skin requires no particular attention, as it will pass off spontaneously, in the course, generally, of three or four days, without any unfavorable effects, either immediate or remote. But when the white of the eyes becomes yellow, the urine charged with bilious matter, the bowels costive, and the stools whitish or clay-colored, accompanied with an inclination to vomit, or with actual vomiting, and an anxious and distressed expression of the countenance, the disease is evidently connected with more or less serious disorder of the biliary organs, and should be promptly opposed by a suitable course of remedial measures. When along with these symptoms, there is fever, and a swollen and tender state of the right hypochondriac and epigastric regions, the worst consequences are to be apprehended; for cases of this kind, frequently resist every curative effort that can be made, and proceed with increasing violence to a speedy termination in death, or assume a chronic character, with progressive emaciation of the extremities, and tumefaction and hardness of the abdomen, until the vital powers are consumed. Fortunately, however, these dangerous cases are not common. In by far the greater number of instances, the disease is not attended with any violent and disorganizing form of hepatic disorder, and, though manifestly dependent on biliary derangement, is of a comparatively mild and manageable character.

The exciting causes of infantile jaundice are, doubtless, very various, Mr. Baumes thinks that meconial matter unduely retained in the bowels, is frequently concerned in the production of the disease; and Mr. Gardien expresses the same opinion. Dr. Underwood does not believe that the meconium can have any part in producing jaundice, except, perhaps, by obstructing the orifice of the biliary duct, for which it seems to be well adapted by its peculiarly viscid and adhesive consistence. I am inclined to think, however, that this writer has not attached sufficient importance to this recrementitious substance as a source of jaundice, in newly-born infants. To whatever circumstance it may be ascribed, I am persuaded that this disease occurs more frequently where there is delay and difficulty experienced in purging off the meconium, than where this substance is easily and entirely evacuated during the first twenty-four hours. It is, indeed, not probable that the yellow color of the skin is, in any degree, derived from absorbed meconial matter; and it may well be questioned whether any portion of this recrement is ever absorbed into the circulation. The way, perhaps, in which retained meconial matter contributes to the production of infantile jaundice is, by exciting irritation in the intestines, and, in conjunction with other causes, particularly the purgatives that may be employed for the removal of this substance, giving rise to mucous inflammation of the duodenum and consequent functional derangement of the liver, or obstruction to the flow of bile into the bowels. That a morbidly irritable or inflamed condition of the mucous membrane of the duodenum, is apt to give rise to jaundice is well known. "A curious pathological fact," says Dr. Johnson, "has lately been fairly established—namely, that irritation or inflammation of the mucous membrane of the duodenum, will sometimes produce jaundice, where no obstruction can be detected in the biliary ducts." Cases of this kind are always attended with excruciating paroxysms of pain in the region of the duodenum, an hour or two after taking nourishment, resembling the pain produced by the passage of a biliary concretion through the common bile duct. I have met with several cases of this variety of the disease, in adults, which, after all the usual remedies for jaundice had been ineffectually tried, were speedily cured, and without a single recurrence of the pains by an exclusive liquid mucilaginous diet, and the application of a blister to the epigastrium. It is highly probable, that the jaundiced appearance which occurs in yellow fever, depends, mainly, on the gastro-duodenal inflammation so universally connected with that disease. In relation to infantile jaundice, my own observations have satisfied me, that, in some instances at least, this disease is the immediate result of mucous inflammation of the upper portion of the intestinal canal. In a dissection which I made about two years ago, of an infant that had died in a state of deep jaundice, apparently in consequence of inflammation of the liver, I found the mucous membrane of the duodenum in a highly diseased condition. Some parts of it were of a uniform scarlet color,—others were softened to the consistence of jelly, and of a gray or ashy hue, and in several places it was entirely destroyed and removed, leaving the muscular tunic bare. The orifice of the bile duct was slightly tumified, but the duct was pervious throughout. The liver was much engorged with blood, but exhibited no other obvious marks of structural lesion. Improper artificial nourishment during the first two or three days after birth, and the exhibition of irritating purgatives for the removal of the meconium, are doubtless frequently concerned in the production of this disease. The gastro-duodenal irritation which is apt to be excited in this way, can seldom fail to produce more or less functional derangement of the liver; and when the duodenal irritation passes into a state of actual inflammation, jaundice may result, either from spasmodic closure of the mouth of the common bile duct, in consequence of the extremely irritable condition of the duodenum, or from sympathetic irritation with excessive sanguineous engorgement of the liver, and consequent functional torpor. In cases attended with a highly irritated or sub-inflamed condition of the duodenum, there is usually much sickness and frequent vomiting of a glairy fluid; the epigastrium is tender to pressure, and the little patient is affected with occasional paroxysms of violent screaming and agitation, particularly some time after taking nourishment.

In some instances the disease is unequivocally attended with inflammation of the liver. The right hypochondrium becomes tumid, tense, and tender to the touch. The fever is strong, the respiration short and oppressed, and almost every attempt to move or lift the infant, immediately increases its sufferings and causes it to scream out with anguish.

Very frequently, however, the hepatic derangement upon which the jaundice depends is entirely unconnected with inflammation. The liver may be in a state of inactivity from excessive sanguineous engorgement; or its torpor may depend on induration with or without enlargement, or on some other form of structional disorder. In cases of this kind there is, in general, but little or no febrile irritation. The infant is apt to fall into a drowsy and languid condition, with weakness of the digestive functions, acidity, vomiting, and flatulent colic pains. The disease usually assumes a chronic character, attended with progressive emaciation, and derangement of the alimentary canal. Instances depending on excessive sanguineous congestion of the liver, are usually attended with manifest indications of a general plethoric condition of the system. It has appeared to me that jaundice, from this cause, is most apt to occur in those infants, who are born with a turgid and livid appearance of the face and body, and an oppressed state of the brain—more especially where the vessels are not promptly relieved by abstracting blood from the divided cord.

Without doubt, too, infantile jaundice, may in some instances depend on obstruction to the regular flow of the bile, from spasmodic constriction of the biliary canals, wholly independent of any local or general inflammatory excitement. Mr. Gardien, observes that spasmodic constriction of the biliary pores may be occasioned by, the sudden exposure of the newly-born infant to cold air or water—the constringing impressions of which, may be sympathetically conveyed from the skin to the hepatic system. When we advert to the intimate relation which subsists between these two organs, and the extremely sensible and excitable state of the skin, immediately after birth, we can scarcely doubt that the disease may, be produced in this way.

Treatment.—It has already been stated that in the ordinary cases of yellowness of the skin—when the infant does not manifest any obvious indications of indisposition, and the alvine discharges continue to be colored with bile, no active treatment is required. The customary warm bathing for preserving a pure and healthful condition of the skin, and a proper attention to the state of the infant's bowels—promoting their action, when they are torpid, and restraining it when there is a tendency to griping and diarrhœa, is in general all that is required in cases of this simple character.

When the disease is not attended with an inflamed condition of the liver, though obviously connected with derangement of the biliary organs—that is, when the skin and eyes are yellow, the urine bilious, and the stools whitish or clay-colored, without any soreness or tenderness to pressure in the right hypochondriac and epigastric regions, much benefit may sometimes be derived from emetics. In cases of mere congestion and inactivity of the liver, or in hepatic torpor from any cause, the concussive operation of an emetic frequently proves highly beneficial by accelerating the circulation in the portal system, exciting the action of the liver, and relieving its congested condition, by determining the blood from the internal to the external parts of the body. A few grains of ipecacuanna should be given every fifteen or twenty minutes until vomiting is produced; and when the disease is obstinate, the emetic may be advantageously repeated, every other day, until the alvine evacuations acquire a bilious appearance. In all instances, however, of a manifestly inflammatory character, attended with fulness, tension and unequivocal soreness of the region of the liver and stomach, emetics cannot be employed without considerable risk of injurious consequences. The bowels ought to be freely evacuated in the commencement of the treatment; and for this purpose calomel and castor oil appear to be the most suitable means. A fourth of a grain of calomel should be given every two hours, until two or three grains have been taken. If free purging does not ensue, the operation of the calomel must be promoted by castor oil, given in teaspoonful doses every hour, until the desired effect is obtained. After the bowels have been once freely evacuated, they must be kept in a loose state, by administering a fourth of a grain of calomel every morning noon and evening, with an occasional teaspoonful of castor oil, should the torpor of the intestines render an additional purgative necessary. Calomel is a valuable medicine in every modification of infantile jaundice, on account, both of its aperient effects on the bowels, and its specific operation on the biliary organs, and general capillary system. In conjunction with these remedies, the daily use of the warm bath, is often decidedly beneficial; and when the infant can bear it without manifest suffering, gentle frictions with the bare hand, over the region of the liver and stomach, repeated several times daily, frequently produces an obviously salutary effect in cases of this kind. It need scarcely be observed, that frictions of the abdomen would hardly fail to prove injurious in cases attended with hepatic inflammation or abdominal tenderness. It is only when the region of the liver and stomach may be pressed without causing the infant to cry or manifest increased distress and sufferings that frictions can be used with propriety—and when this is the case, they almost always prove decidedly beneficial.

When infantile jaundice is attended with a febrile condition, and symptoms indicative of hepatic inflammation—such as fulness, and tenderness in the region of the liver—a very scanty secretion of high-colored urine, absence of the respiratory motions of the abdominal muscles, frequent nausea and vomiting, and an expression of pain and suffering in the countenance, a treatment more decidedly antiphlogistic is required. Four or five leeches, if they can be procured, ought to be applied to the right hypochondrium. The local abstraction of blood, by leeches, in cases of this kind, is of the utmost importance, and ought never to be omitted, where it is practicable. In violent cases, the application of a small blister to the region of the liver, will often procure very considerable relief. No injurious consequences need be apprehended from a vesicatory, at this early stage of life, if managed with proper care. I have in several instances, where the liver appeared to be in a state of inflammation, resorted to the application of a blister, with unequivocal advantage. The plaster should not be suffered to remain on the skin longer than about two hours. The skin generally becomes slightly inflamed by this time; and if the plaster be now removed, and a soft warm poultice laid over the part, a fine blister will be raised, without harassing the infant. The bowels must be freely evacuated with calomel, aided by castor oil. A half a grain of calomel should be given every two hours, until two or three grains are taken, and followed by a teaspoonful of castor oil, every two hours until active purging is produced. When the stomach is very irritable, however, and there is reason to apprehend the existence of a highly irritated or subinflammatory condition of the mucous membrane of the stomach and superior portions of the intestinal tube—that is, where there is frequent vomiting of a glairy fluid, with occasional fits of agitated screaming and manifest distress soon after taking nourishment into the stomach, together with tenderness and tension of the epigastrium, it will be better to employ minute doses of calomel and ipecacuanna without the castor oil, and promote their action on the bowels by laxative clysters. I have in a few cases employed these two articles, according to the formula given below,* with a very satisfactory result. A dose should be given every two hours, in conjunction with the administration of laxative enemata, until adequate evacuations have been procured. The same powders, or minute portions of calomel without the ipecacuanna, must afterwards be regularly given every morning, noon, and evening, until the alvine discharges become conspicuously bilious. No ill effects need be feared from ipecacuanna in this irritable and irritated state of the primæ viæ. When exhibited in very small doses, so far from exciting or irritating the stomach, it generally exerts a decidedly calming and anti-emetic influence, and almost always promotes, to an evident degree, the aperient operation of the calomel. In cases of this inflammatory character, some advantage may be derived from the application of a large warm emolient poultice over the upper part of the abdomen, and frequently renewed so as to keep it warm. In some instances the calomel fails to excite the action of the liver, and causes injurious irritation of the mucous membrane of the bowels, giving rise to frequent small turbid watery discharges, attended with severe griping and increased abdominal tenderness. When this occurs, we may sometimes obtain the desired mercurial influence on the liver, by applying a mercurial plaster over the region of this organ, or by the internal use of a quarter of a grain of Dover's powder in union with half a grain of finely powdered dry and hard mercurial mass, exhibited every morning, noon and evening. A fourth of a grain of Dover's powder, in conjunction with a grain of the bi-carbonate of soda, given every three or four hours, is an excellent remedy for allaying the intestinal irritation and exhausting diarrhœa which sometimes occurs in the advanced stages of the disease.

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* R. Submuriat. Hydrarg. gr. iii: Pulv. Ipecac. gr. ii; Sacher. Alb. gr. xii. Mix and divide the whole into 12 equal parts.

In general calomel and purgatives are the means upon which our main reliance should be placed in treatment of this malady. The bowels are usually very torpid, and considerable difficulty is often experienced in procuring the necessary evacuations. It is seldom, however, that any more active purgatives are required than the articles already mentioned, in conjunction with laxative enemata. Should this necessity occur, we may safely, and with almost certain success add from eight to ten drops of spirits of turpentine to the dose of castor oil. I have resorted to this mixture, in cases of this kind, with the happiest effect.

The vegetable alkalies have a very beneficial tendency in certain modifications of this disease. The bi-carbonate of soda, is especially useful in cases of a chronic character, unattended by symptoms of active abdominal inflammation. A grain of this alkali, dissolved in a teaspoonful of carbonated water, or a teaspoonful of the common soda mineral water, (of the strength of sixty grains of soda to ten ounces of carbonated water,) given at intervals of two or three hours, is well adapted to do good, where there is a deficiency of bile in the bowels, by its direct tendency to prevent fermentation and the consequent generation of acid and other irritating substances in the primæ viæ, and by promoting the regular peristaltic action of the bowels. After the alvine discharges have become bilious, the regular exhibition of both the soda and calomel should be discontinued, and the bowels kept in a loose state by small doses of castor oil, or the occasional administration of an injection. In *chronic* cases of infantile jaundice, considerable advantage may, sometimes, be gained, from the use of the *extract of dandelion*, in union with bi-carbonate of soda. Ten grains of the extract, dissolved in about a teaspoonful of warm water, together with two grains of the soda, may be given three times daily. It generally keeps up a regular action of the bowels—excites the urinary secretion, and appears to produce a salutary effect upon the biliary organs, and general capillary system, as may be inferred, from the gradual subsidence of the abdominal fulness and tension, and the disappearance of the yellowness of the skin, under its use. In a case which I attended a few months ago, the disease gradually increased in violence under the use of small doses of calomel, and ipecacuanna. The abdomen became distended and hard, and the skin of a deep yellow color. The calomel was finally omitted, and ten grains of the dandelion with two grains of soda administered three times daily. In a few days after the use of this remedy was commenced, the disease began to abate, and gradually disappeared altogether.

In cases attended with severe flatulent and spasmodic pains of the stomach and bowels, three or four grains of assafœtida, dissolved in a few tablespoonsful of warm water, and injected into the rectum, will generally afford much relief. We may also administer two or three drops of sulphuric æther in a teaspoonful of *hop tea*, with decided benefit in such cases. The infusion of hops is, indeed, a most excellent palliative in the jaundice of infants. It does not interfere with the action of the necessary laxatives, and along with its anodyne effects, generally exerts a decidedly favorable influence on the digestive functions. When the disease depends on engorgement and torpor of the liver, without structural lesion, Gardien recommends the use of the black oxide of iron, with the yolk of an egg. Two or three grains of the former, beat up with a yolk of an egg, given three times daily, is said to produce excellent effects, in some instances of this kind.

CHAPTER VII.

OF THE RETENTION AND SUPPRESSION OF URINE.

Some urine is probably, in most instances, secreted, and deposited in the bladder, before the infant leaves the womb; for, in the majority of cases, a discharge of urine occurs, within a very short time after birth. Sometimes, however, the kidneys appear to remain inactive, and little or no urine is evacuated for many hours after the birth of the infant. I have met with several instances where a period of upwards of twenty hours elapsed before a sufficient quantity of urine was secreted and collected in the bladder to excite an evacuation. It is of great consequence, in cases of this kind, to acertain whether the non-occurrence of the urinary discharges, depends on a suppression of the secretion from torpor or inactivity of the kidneys, or whether the urine though adequately secreted, is retained in the bladder in consequence of some obstruction to its discharge, or deficient contractile power of the bladder. When there is but little or no urine secreted during the first fifteen or twenty hours after birth, the infant seldom manifests any uneasiness that can be referred to this cause; but when the renal inactivity is protracted much beyond this period, the consequences may be very serious and even fatal. Cases of this kind are, indeed, extremely uncommon. I have seen but one instance of very protracted *ischuria renalis*, in a newly-born infant. The child was born about 10 o'clock in the evening On the following morning I was informed that it had as yet voided no urine. It appeared to be quite healthy, and free from uneasiness. I ordered a teaspoonful of weak parsly-tea, with two drops of sweet spirits of nitre every twenty minutes. In the evening, I found the child in a drowsy state, and restless. I assured myself that the bladder was empty, by the introduction of a very small catheter. The warm bath was ordered, and frictions over the abdomen and loins, with a mixture of juniper-oil, and tincture of squills. Internally three drops of sweet spirits of nitre, together with four drops of the vinegar of squills were given, every half hour in a teaspoonful of wild carrot-seed tea. Next morning the little patient was in a state of complete stupor—the respiration slow, weak and irregular, and the eyes insensible to light. On the following night it died. I was not permitted to make a post-mortem examination. In general, the action of the kidneys is readily excited, where the urinary secretion is slow, or suppressed, during the first nine or ten hours after birth. A few teaspoonfuls of parsly or wild carrot-seed tea, with two or three drops of sweet spirits of nitre, given every half hour, and the warm hip bath, (after the bowels have been freely evacuated,) are generally sufficient to excite the secretory action of the kidneys. Should these means fail to produce the desired effect, recourse may be had to friction over the loins and hypogastric region, with warm vinegar of squills, or a mixture of about a drachm of juniper oil with an ounce of sweet oil, or with the expressed juice of onions diluted with water; and internally, to the exhibition of a few drops of the vinegar of squills, a drop of spirits of turpentine in a teaspoonful of milk or four or five drops of the expressed juice of roasted onions, every thirty or forty minutes; in conjunction with warm bathing, laxatives, and if necessary laxative enemata.

When there is *retention* of the urine—that is when the urine is regularly secreted, and conveyed into the bladder, but cannot be discharged in consequence of a spasmodic constriction or mechanical obstruction of the urethra, or perhaps, deficient contractile power of the muscular coat of the bladder, the phenomena, consequences and appropriate mode of management are very different from those which belong to *suppression* of the urinary secretion. Instances of more or less complete *retention* of the urine, immediately after birth are by no means uncommon. Obstruction of the urethra or of the neck of the bladder by viscid and inspissated mucus, is probably the most frequent cause of retention of the urine in newly-born infants. When by the gradual accumulation of the urine, the bladder becomes considerably distended, the infant begins to manifest pain and distress, which is obviously increased by pressure made with the hand upon the hypogastric region. The distended bladder may be more or less distinctly felt above the pubis; the infant is restless, its countenance has an expression of suffering and distress, and its legs are constantly drawn up, to relieve the pressure of the abdominal muscles. If the obstruction be not removed, the abdomen gradually becomes more and more enlarged by the distended bladder, and acquires, at last, a tense and shining appearance, with the superficial veins, very much enlarged and turgid with blood. If relief be not obtained, rupture of the bladder finally takes place, and death is the inevitable consequence. The bladder sometimes becomes enormously distended before ulceration or rupture takes place. Dr. Dewees gives an account of a very remarkable instance of this kind, in which Dr. Parrish drew at one time eighteen ounces of urine from the bladder. The child did not recover. A few years ago I was called to consult in a case of this kind. The attending physician was a very young man, and tampered with inefficient means until it was too late. Before I arrived the bladder had yielded to the distending force, and the urine was extravasated into the cavity of the peritoneum. Of this I satisfied myself by a post-mortem examination.

In some cases, after the bladder has become much distended, small portions of urine are, from time to time evacuated, although the quantity retained, is progressively increased; and this occurrence almost always misleads the nurse, and often even the medical attendant, and removes every suspicion of urinary difficulty. The urine is thus gradually accumulated, and the manifest distress and suffering is ascribed to other causes, until the bladder, at last, gives way, and the infant dies in great agony from peritoneal inflammation. I am persuaded that infants sometimes die in this way, who might easily be saved if the real cause of its sufferings did not thus escape the attention of the practitioner. "We have strong reasons to believe," says Dr. Dewees, "that many have died of suppression (*retention*) of urine, though we were assured they had passed water—the same was insisted on, for awhile in the case (referred to above) just mentioned, and perhaps there may have been a small discharge, as always happens when the bladder becomes excessively distended." When the infant becomes restless and fretful, and persists in keeping its legs drawn up, and particularly when we are informed that its abdomen is swollen and hard, the region of the bladder should be carefully examined, and no reliance placed on the nurse's declaration, that the urine is regularly evacuated, if there is the slightest reason on examination, to suspect an accumulation of urine in the bladder.

The external urinary passage ought always to be carefully examined in newly-born infants. I was once called into the country, to visit an infant, which, I was told, had not discharged any urine since its birth. I saw it about forty hours after birth, and found it evidently in a state of very great suffering. The bladder was very much distended, and could be easily felt beneath the abdominal muscles. On examining the urethra, for the purpose of introducing a small flexible bougie, I found its orifice closed, by a thin semi-transparent membrane, about the tenth of an inch below the surface, or extremity of the passage. I divided it with a sharp-pointed bistory, and the urine instantly gushed out with much force. Sometimes the prepuce is entirely closed. I have seen two cases of this kind. In one there was a very small opening, scarcely admitting a pin's head, and altogether insufficient to admit of the discharge of the urine; in the other case, tne closure was complete. In both, the difficulty was speedily removed by circumcision.

The common practice of exhibiting diuretics, or remedies calculated to increase the secretory action of the kidneys, in cases of *retention of the urine*, is always highly improper, as it cannot, in any way, aid in removing the obstruction, but must necessarily tend to aggravate the distress and danger, by rapidly increasing the fluid in the bladder.

When the inability to discharge urine, depends on *retention* of the secretion in the bladder, and the vesical distention and sufferings of the little patient are, as yet, not so great as to require prompt relief, a trial may be made with the warm bath, purgatives, emolient enemata, and gentle frictions with camphorated oil, or tincture of hyosyamus, over the pubic region. Where the obstruction is slight, these measures will sometimes, remove the difficulty and bring on the urinary discharge. They should not, however be long persisted in, if they do not procure some advantage before the symptoms become more urgent. The bougie and catheter are the proper means for giving relief; and the obstruction is but very rarely of such a character as to render the judicious employment of them necessarily abortive. The introduction of a small bougie will, sometimes, remove the obstruction and procure relief. But when the retention arises from a spasmodic constriction of the urethra, or sphincters of the bladder, or when the bladder has lost its power of contraction from over distention, the bougie can do little or no good, and recourse must be had to a proper sized flexible catheter. Great care and delicacy must be practised in the attempt to introduce such an instrument into the bladder of an infant. A very slight force will lacerate the urethra, and form an artificial passage into the cellular tissue of the perineum. I once knew a young surgeon, in attempting to introduce the catheter into the bladder of an infant, (male) push it through the membraneous portion of the urethra two or three inches before he discovered that the instrument was not in the natural passage. The child died. When the bladder has been greatly distended, and relieved by the catheter, its contractile power is apt to become temporarily impaired, so as to suffer the urine to re-accumulate to an extent sufficient to keep the infant in a state of constant uneasiness or distress, although a regular and apparently sufficiently copious discharge from the bladder takes place. Hence in instances of retention, where there has been great distention of the bladder, it often becomes necessary to use the catheter repeatedly, until the bladder regains sufficient power to evacuate itself, without artificial assistance. Sprinkling a little cold water on the lower part of the abdomen will sometimes excite the bladder into action in cases of this kind. The application of camphorated oil, by gentle friction over the pubic region, may also aid in restoring a proper tone to the muscular coat of the bladder.

When there is reason to believe that the retention depends on spasmodic constriction of the urethra, a drop of the muriated tincture of iron, given every twenty or thirty minutes, may be beneficial. In spasmodic retention of urine in adults, this article, sometimes affords speedy relief; and it would doubtless exert a similar beneficial effect in retention of the same character in infants. In all cases particular attention ought to be paid to the state of the bowels. The meconial matter should be completely evacuated, if the urinary difficulty occurs during the first few days after birth—and in all instances the bowels ought to be freely evacuated.

[The importance of early relief for retention of urine in infancy, as well as in adults, is not a little enhanced by the well-known poisonous quality of urea which has been found in the younger, as well as in the older subject. The absorption of this deleterious agent into the blood, and its conveyance to the brain and nervous system, is supposed by some to account for the sudden deaths in cases of retention of urine. Few remedies answer more certainly than the warm bath, aided by frequent injections of warm water. In some instances, the alternation of cold dash on the pubic region, and the use of the warm hip-bath, has been promptly efficacious. Occasionally, no remedy will be more certain than free vomiting, while the child is in the warm bath. This can be kept up for a suitable length of time by a warm infusion of ipecacuanha, made by adding half a drachm of the fine powder to four ounces of boiling water. Give a teaspoonful every ten minutes, until vomiting is induced, and repeat at longer intervals: nausea alone, if long continued, will often be effectual. In mild cases, the end may be reached by the constant application of bruised garlic, or onions, steeped in hot vinegar, and laid on the pubic region as warm as can be borne.

I have known serious injury to result from efforts to pass the catheter, in very young children. And as all are not expert in this operation, it is preferable to try all feasible expedients first, resorting to the instrument, only, as the last alternative.]

CHAPTER VIII.

OF DYSURIA—OR PAINFUL AND DIFFICULT MICTURITION.

Pain and difficulty in voiding urine is a frequent complaint among infants. It is particularly apt to occur during dentition, and sometimes acquires a very distressing degree of violence. The child may, in other respects appear perfectly well and playful, but the moment it begins to discharge urine, it becomes agitated with excruciating pains, and shrieks uninterruptedly and violently until the evacuation is completed, when it instantly becomes quiet and as well as usual. Not unfrequently this painful urinary affection goes on for many days, before its true character is detected—the vehement fits of screaming being usually ascribed to griping or transient colic pains. When an infant is observed to have occasional fits of violent shrieking and agitation, without any obvious cause, painful micturition may be suspected: and on proper enquiry it will, probably, be found that these spells of suffering, occur only when the infant is voiding urine—a coincidence which will, at once render the nature of the evil manifest. In many instances, however, the pain is much less severe. Instead of the occasional fits of excruciating suffering, the child manifests a very frequent desire to pass urine, which is voided in very small quantities and always with obvious distress and uneasiness. This difficulty sometimes continues for many months—particularly if the child be cutting teeth, and may ultimately lead to very distressing consequences.

These affections are almost always attended with an unnatural condition of the urinary secretion. In the majority of cases the urine contains a large portion of lithic acid; and occasionally it is highly charged with phosphatic sedimentous matter. These substances impart a peculiarly irritating quality to the urine.

and when they are copious, and the system is in an irritable condition, as it usually is during dentition, they may readily produce a considerable degree of irritation about the neck of the bladder, and give rise to pain and difficulty in passing urine. Children who are much affected with acidity in the primæ viæ, are most apt to experience urinary difficulties of this kind. The tendency of acid in the alimentary canal to increase the secretion of lithic acid by the kidneys is well known; and it is equally well ascertained that an excess of lithic matter in the urine, seldom fails to manifest itself by some irritation about the neck of the bladder, and more or less painful micturition.

Dentition, and a disordered state of the digestive functions constitute the principal remote causes of this form of urinary disease. The former by the general irritative condition of the system which it causes, strongly favors the development of the lithic acid diathesis; and, as has already been stated, the generation of acid in the alimentary canal, in consequence of feeble digestive powers, or the use of improper articles of food, appears to furnish the elementary materials, for the formation of lithic deposits in the urine. Intestinal irritation from worms, appears in some instances to give rise to painful and difficult micturition—though in cases of this kind the urinary deposits are usually of the alkaline variety. Ascarides frequently occasion considerable irritation about the neck of the bladder, and become the source of urinary difficulties.

Treatment. When a child becomes affected with pain and difficulty in passing urine, this secretion ought to be carefully examined, both in a recent state, and after it has stood for some time. If the sedimentous matter of the urine be of a red, or reddish color, remedies calculated to counteract the secretion of lithic acid by the kidneys will be indicated and will probably procure speedy relief. The proper treatment in such cases, consists in the employment of means suited to correct the digestive and intestinal functions, and to keep up a regular action of the cutaneous emunctories. The bowels should be freely evacuated with magnesia and rhubarb, and afterwards kept in a moderately loose state by the daily use of small doses of calomel and ipecacuanna.

A grain of the former, with a fourth of a grain of the latter, constitutes a proper dose for a child under five years of age. Where there is a prevailing tendency to acidity in the primæ viæ, much benefit may be obtained from the use of the sub-carbonate of potash, in union with a weak infusion of colomba. From two to three grains of the potash dissolved in a teaspoonful of weak infusion of colomba, diluted with a small portion of barley water, flaxseed tea, or some other mucilaginous fluid, may be given once, twice, or thrice daily, according to the urgency of the urinary affection. The diuretic and antilithic properties of the sub-carbonate of potash, renders it a peculiarly suitable medicine in cases of this kind. Small doses of magnesia, lime-water and milk, and the bi-carbonate of soda, also, frequently procure relief. When the general system is in a slightly febrile condition, as it often is during dentition, considerable advantage may be derived from tepid bathing, in conjunction with mild diaphoretic remedies; such as the *spirit. minderiri*, with the addition of a small portion of sweet spirits of nitre, and syrup of squills. Particular attention should be paid to the diet. When the tendency to the formation of acid in the primæ viæ is very great, beef or chicken tea should be in part substituted for the usual farinaceous nourishment, and all saccharine and acescent articles should be avoided.

When painful and difficult micturition is attended with a copious secretion of the phosphate of magnesia and ammonia—an occurrence by no means uncommon, a very different treatment is required. In cases of this kind, the urine is usually pale, rather abundant, depositing a whitish or yellowish white sediment, and peculiarly prone to become putrid when suffered to remain at rest. It is almost always attended with an irritable condition of the general system, and with obvious derangement of the digestive organs and irregularity in the action of the bowels. Aperients, mild tonics, opiates, and the vegetable acids, constitute the appropriate remedies in such cases. The bowels, in the first place, should be freely evacuated with rhubarb or caster oil.—Very small doses of Dover's powders, given two or three times daily, generally produce an excellent effect. A half a grain of this article, with a grain of powdered valerian, may be given every six hours, to a child between two and five years of age. The occasional use of lemonade, or of water sweetened with lemon syrup, will sometimes assist very materially in correcting the urinary secretion. The diet should be of the mildest and most nutritious kind: considerable benefit may also be derived from the employment of muriated tincture of iron, in cases of this kind. I have known two drops of this tincture, given three times daily, to afford great relief in such a case. The diet should be mild and nutritious, and taken in very moderate quantities. Children who have passed through the period of primary dentition, may be allowed small portions of the tender and lean parts of beef, mutton, lamb, and chicken; but at an earlier age, the usual farinacious preparations, mixed with a little of beef or chicken tea, are undoubtedly the most proper. Magnesia and other articles of an alkaline character, are decidedly improper.

When pain and difficulty in voiding urine is not attended with a morbid condition of the urine either acid or alkaline, mucilaginous and slightly diuretic diluents, in conjunction with laxatives, and the occasional use of the warm bath, may be resorted to with a prospect of advantage. A weak infusion of the wild-carrot seed, or of parsley mixed with an equal portion of flax-seed or water-melon seed tea, will usually do well for this purpose.

In some instances, extremely painful micturition depends on an irritable or slightly inflamed state of the extremity or orifice of the urethra. This difficulty is almost wholly confined to female children. I have quite lately witnessed a case of this kind. The child (about two years old) suffered severe pain every time it passed urine. The affection had continued seven or eight days before the source of the urinary difficulty was discovered. The orifice of the urethra was slightly swollen, red, and so extremely sensible, that it could not be even lightly touched, without causing the child to shriek with pain. In cases of this kind, the pain and uneasiness usually continue for several minutes after the urine has ceased to pass off. The case just mentioned was speedily relieved by washing the inflamed and tender part with a strong solution of borax. The application of citrin ointment, weakened by mixing it with an equal portion of lard, seldom fails to reduce the inflammation in such cases. I have also used an infusion of galls, together with a watery solution of opium, with an excellect effect in this variety of painful micturition. It should be applied with a dossil of lint. Merely covering the inflamed part with lard, or some mild ointment, will generally protect it from the painful impressions of the urine, and enable it to heal.

During dentition the urine sometimes becomes more or less deeply tinged with blood, without any difficulty or pain in voiding it. The appearance of blood in the urine, always excites considerable alarm; but where it is not attended with symptoms of irritation or inflammation in the urinary organs, it generally passes off without any unpleasant consequences. Small doses of the muriated tincture of iron, mild laxatives, and warm bathing, and mucilaginous drinks, seldom fail to remove it speedily.

It is of great consequence to attend to the urinary affections of infants, even though they may not appear to be of a serious character in their immediate effects. This is particularly true in relation to those instances of urinary difficulty that are attended with lithic acid, or phosphatic sediments. Dr. Prout observes, that "children in general, and especially the children of dyspeptic and gouty individuals, or who inherit a tendency to urinary diseases, are exceedingly liable to lithic acid deposits in the urine. If the urine be examined, it will always be found to be very unnatural, and frequently loaded with lithic acid; and should this prove to be the fact, the case requires immediate attention, as there is much greater risk, at this period of life, than at any other, of the formation of stone in the bladder." * In another place, this highly respectable writer states: every thing in our power ought to be done, "for preventing the effects of (lithic acid deposits in the urine) and eradicating the disease in early life; and perhaps, it may not be deemed superfluous, here, to insist upon the absolute necessity there is for attending to the subject, when children are concerned." In such cases, it should be constantly borne in mind, that by proper care, the formation of stone in the bladder, may almost certainly be prevented; but by inattention, this dreadful occurrence is as certainly likely to take place.

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* Prout—Inquiry into the Nature and Treatment of Affections of the Urinary Organs. Chap. vi. s. ii.

CHAPTER IX.

OF ENURESIS, OR INCONTINENCE OF URINE.

Incontinence of urine—or rather a habit of discharging urine at night, while sleeping in bed, is a very common affection during childhood. Although very rarely attended with any particular uneasiness, or painful urinary irritation, it is always an extremely disagreeable occurrence, and the habit is apt to become so confirmed, that unless early counteracted by suitable measures, it often continues to the age of puberty, and occasionally, even to adult age. It is generally supposed that the discharge takes place involuntarily, without the least consciousness of its occurrence; and this is doubtless frequently the case. In the majority of instances, however, the discharge is a voluntary act—the result of an active effort of volition, under the fallacious conceptions of a dream. In children, this disagreeable affection is very often associated with an unnatural condition of the urinary secretion itself. In those cases, especially, where the discharge takes place in consequence of a voluntary effort excited by a lively dream, the urine, almost always contains an excess of sedimentous matter, particularly lithic acid, and its compounds, imparting to it an acrid and irritating character. "Hence," says Dr. Prout, "I have been led to infer, that in this species of urinary incontinence, the acrid properties of the urine are chiefly in fault; and that these, favored, perhaps, by the position of the body, and probably, also, by the morbid sensibility of the bladder, excite so vivid an impression on the imagination, as actually to lead to a voluntary effort to discharge the urine."

The urine is seldom discharged during sleep, except when the individual is lying on his back. Mr. Charles Bell affirms, that "incontinence of urine never takes place but while the boy is asleep upon his back." In this position the urine gravitates backwards, and presses immediately on the "sensible spot—the master-spring of the muscles of the bladder, situated a little behind and below its orifice."

When children neglect to pass off the urine just before going to bed, the bladder is apt to become distended in the course of the night. The impressions thus made on the bladder, pass to the brain, and awaken a dream occupied with a desire to mictu rite, and the sphincter yields to the voluntary effort prompted by the desire.

That incontinence of urine is very frequently, perhaps always in the first instance, excited by an acrid condition of the urinary secretion, or by distention of the bladder, in the way just mentioned, admits of no doubt; yet in the majority of protracted cases, the recurrence of the discharge depends mainly on the influence of habit; and in many instances, this is doubtless the sole cause of its repetition.

Dr. Prout thinks that "some peculiar morbid condition of the urinary organs" constitutes the most frequent cause of those cases of nocturnal incontinence of urine, in which the discharge takes place involuntarily, and without any consciousness of its occurrence. Cases of this kind are almost always very obstinate in their course. They often continue for many years, and sometimes "even till late in life." It is by no means improbable, that this variety of incontinence sometimes depends on some obscure morbid state of the bladder; but it can scarcely be doubted, that in the majority of such cases, the recurrence of the involuntary urinary discharges, depends chiefly or entirely on the potent influence of habit. That the recurrence of the discharge in protracted cases, frequently depends solely upon habit, seems to be demonstrated by the character of the means, most commonly successful in arresting its continuance. We may often remove this evil by exciting a slight degree of irritation about the neck of the bladder; so that the moment the urine begins to flow, painful strangury occurs, by which the person is awakened, and the evacuation is prevented. By repeating this for some time, the habit is broken up, and the involuntary discharge ceases to recur.

I am entirely satisfied that this unpleasant complaint very generally *commences* in consequence of an unnatural condition of the urine itself. When the urine becomes unusually irritating, its impressions on the bladder during sleep, when it becomes accumulated, are sufficiently strong to affect the sensorium commune in such a way as to excite a desire, and a consequent volition to micturate. It is not improbable that even in cases that are deemed strictly involuntary, and unperceived by the mind, the discharge takes place under an act of volition, which, however, is not remembered on waking. Persons who walk about while asleep, unquestionably exercise conscious volition, though wholly unable to recollect any thing about it when awake. Many things have been done during sleep, manifestly under the control of the will, and probably even under the guidance of the senses, of which not the slightest trace is left on the mind, in the waking state.

Treatment.—From what has been said above, it need scarcely be observed, that in prescribing for a case of this kind, particularly when of a recent character, the urine ought to be carefully inspected, as a preliminary step in the adoption of a suitable plan of management. Should the urine be found to contain much sedimentous matter, remedies ought to be employed for correcting the urinary secretion. If the lithic acid deposits predominate, small doses of magnesia, lime water, the sub-carbonate of potash, or of the bi-carbonate of soda, should be resorted to, in conjunction with laxatives and other means for improving the digestive and hepatic functions. In cases attended with phosphatic urinary deposits, remedies calculated to invigorate the digestive organs, together with opiates, vegetable acids, and acescent articles of nourishment will be proper. By such a course of management, recent cases may sometimes be completely arrested. But should the attempt to remove the evil, in this way, fail, it is always of much consequence to correct the urinary secretion, when it is found to be in an unnatural condition. "When the incontinence of urine in children is associated with gravel, or an excess of sedimentous matter, it is of the utmost consequence that this circumstance be attended to, and that remedies appropriate for counteracting the formation of these urinary deposits should be employed, before any other means are used to restrain the urinary incontinence;" for without this, all other remedies will be useless (Prout). When the urine has been brought to a healthy or natural state, and the incontinence continues to recur; or in cases that seem to continue under the influence of an established habit, recourse must be had to remedies calculated to alter the sensibility of the urinary organs—more especially of the neck of the bladder. There is no article that has been so generally prescribed for this purpose, as the *tincture of cantharides;* and it is doubtless better adapted to produce this effect than any other remedy we possess. Its mode of operation in the case of this affection has already been explained above. By producing a slight degree of strangury, the person is awakened by the first efforts to urinate; and by thus repeatedly interrupting the discharge, the habit will finally be destroyed. From ten to fifteen drops, according to the age of the patient, should be given three times, in the course of twenty-four hours, and the dose daily increased by two or three drops, and continued until a burning pain is experienced at the neck of the bladder on passing urine. When this effect is produced, its use must be omitted, or continued in occasional doses, so as to keep up a slight degree of the urinary irritation. Should the strangury become too violent, suitable doses of laudanum must be given, at proper intervals, with emolient clysters—and the free use of mucilaginous diluents, such as flax-seed, or mellon-seed tea, barley-water, or a solution of gum arabic, and the warm hip-bath. Blisters applied over the sacrum, are sometimes equally beneficial.

Incontinence of urine in children sometimes depends on a morbidly irritable state of the bladder. The patient is during the day more or less harassed with a frequent desire to urinate, and the discharge is always accompanied with considerable uneasiness, and sometimes with much pain. These cases are usually associated with a morbid condition of the urine—sometimes with an excess of lithic acid, and occasionally with phosphatic deposits. Instances of this kind must be managed in the way stated above. The use of cantharides, or of other remedies calculated to irritate the neck of the bladder, would be highly improper in such cases. An irritable state of the bladder may, however, occur, without any morbid appearances in the urine, and give rise to urinary incontinence. Here, the remedies, proper for counteracting the secretion of the lithic acid, or phosphatic sediments would, probably, prove injurious. In such cases recourse must be had to the warm bath—cooling laxatives, opiates, particularly Dover's powder, the application of a stimulating plaster over the sacrum, and a mild and digestible diet.

When incontinence of urine is attended with irritation of the rectum by ascarides, means should be used to remove these annoying little worms out of the bowels. I once attended a little girl who was for several months much troubled with uneasiness on passing water, and scarcely a night passed, without a discharge of urine during sleep. I at length learned that she was also greatly annoyed by ascarides. By the use of aloetic injections a large mass of them were brought away from the rectum, and the urinary difficulty and incontinence disappeared, for eight or nine months, when they returned, and were again removed by the same means.

Whatever means may be employed for the cure of nocturnal incontinence of urine, care should always be taken to accustom the patient to sleep upon his side or the belly. In this position the urine gravitates towards the fundus of the bladder, and does not rest upon the sensible spot, referred to above; and the patient is therefore not so apt "to be excited to dream of making urine, and to exert a voluntary effort, to urinate, as when he lies on his back." Children should always be required to empty the bladder just before going to bed, and when they awaken at night they ought to be taught to rise and pass off the urine. By a careful attention to these things, the occurrence of the disorder may generally be prevented.

[On the supposition that incontinence of urine is dependent, now and then, on a partial paralysis of the parts involved, the extract of nux vomica, and strychnia, have been employed, and with decided benefit. The dose of the extract may be from a quarter of a grain to a grain, according to age. Of the strychnia, not over a twentieth of a grain could be safely given to a child three or four years old. The safest plan is to dissolve a grain of strychnia in a drachm of acetic acid, and to give three drops for a dose, twice or thrice a day. The French plan of touching the meatus of the urethra with lunar caustic, is promptly efficacious. It sets up irritation, and so warns against the involuntary flow. The application should be repeated until decided irritation is established.

I beg leave to urge my professional brethren to give this remedy a trial very early. It is not at all difficult to decide on the presence of the disability in question, and it cannot be cured too soon. It is criminal to defer so easy and salutary an expedient until a girl is about to be married, and whose modesty recoils from the measure; since the desired result may be reached at a much earlier period of life, when no moral repellencies are in the way.]

CHAPTER X.

OF DENTITION.

The development and progress of the teeth through the gums, takes place in a very gradual manner. The germs of the teeth present themselves in the form of small follicles, containing a pulpy substance, attached to, or continuous with the fascicle of vessels and nerves which penetrate the cells or alveoli in which they are placed. The period at which these germs first make their appearance in the fœtal jaws has not been satisfactorily determined. It is sufficiently ascertained, however, that the first traces of ossification, very rarely occur previous to the fourth month; and it is equally uncommon to find the commencement of this process delayed beyond the middle of the fifth month. At birth, the development of the primary teeth is already considerably advanced. The whole crown is formed, but the root is still imperfect, consisting of a short and thick tubular projection, with very thin sides.

The number of these primary teeth is twenty—namely, four incisors or cutting teeth, two cuspid or eye teeth, and four grinding teeth in each jaw. Between the appearance of the first and the last of the primary or milk teeth, several years usually intervene. The first seldom protrude through the gums before the fourth month, and the last generally make their appearance about the end of the second year. The two middle cutting teeth of the lower jaw, are usually the first that make their appearance. In the course of three or four weeks afterwards, the corresponding incisors of the upper jaw protrude through the gums. These, in a few weeks more, are succeeded by the lateral cutting teeth of the lower jaw; and in a short time afterwards, the lateral incisors of the upper jaw also pierce the gums. In the course of from about two to four months after the eight cutting teeth have made their appearance, the anterior grinders of the lower jaw "elevate their white surfaces above the gums," leaving vacant spaces between them and the two lateral incisors, for the cuspids or eye teeth. Soon afterwards, the corresponding grinders of the upper jaw also make their appearance. The cuspids or eye teeth next come out, those of the lower jaw preceding the upper ones. Finally, the second grinders pass through the gums, and terminate the process of primary dentition.

Although the general progress and order of dentition is such as has just been stated, yet great diversity occurs in different individuals, both in relation to the time at which the teeth protrude through the gums, and the order or succession of their appearance. In some instances, the first incisors appear as early as the second month, and in others, they do not make their appearance until the seventh or eighth month. The usual period of their appearance, however, is about the fifth or sixth month.—The irregularities, in this respect, are sometimes very great. Infants have been born with one or more well-formed teeth protruded. Van Swieten mentions cases of this kind, on the authority of Pliny, Marcellus Donatus, Colombo, &c.; and Haller and Voigtel refer to a great number of similar instances. I have myself seen an infant furnished with two well-shaped incisors, as early as the fourth week after birth. The instances of very tardy dentition are sometimes equally remarkable. I have a child now under my care, which has, as yet, not a single tooth, although upwards of eleven months old. Van Swieten mentions an instance, in which the first teeth did not make their appearance until the child was upwards of nineteen months old; and many cases of much greater delay in the appearance of the teeth, are recorded by Haller Voigtel, and other writers.

With regard to the order in which the teeth are protruded, deviations from the ordinary course, as stated above, are by no means uncommon. In some instances, the two lateral cutting teeth of the lower jaw, make their appearance before the middle ones. Sometimes the incisors of the upper jaw precede those of the lower; and occasionally the eye teeth come out before the lateral cutting teeth. It is rare, however, to find the eye teeth advanced through the gums before the first grinders, although, occasionally, this takes place. Instances are sometimes met with in which all the incisors pierce the gums almost simultaneously.

Although a process of physical development, and, therefore, strictly in accordance with the regular progress of nature, dentition is, nevertheless, almost invariably attended with more or less obvious deviation from a healthy condition of the system. The progress of the teeth through the gums is usually accompanied with a manifest increase of the general irritability of the system. The mouth is generally very hot, and the saliva secreted in great abundance. In many instances diarrhœa occurs; and in female infants, a slight mucous or leucorrhœal discharge from the vulva, is not uncommon. The infant evidently experiences an unpleasant tickling sensation in the gums, as may be inferred from the eagerness with which it bites upon hard substances, and the evident gratification it derives from having its gums firmly pressed and rubbed with the point of a finger. The sharp margin of the gums gradually expands and becomes flatter, and, in difficult cases, inflamed and swollen, as the teeth approach the surface. The infant manifests an irritable and fretful temper; slight exciting causes are apt to give rise to febrile irritation, and one or both cheeks are often flushed, more especially towards evening and after a full meal. When asleep, the child frequently starts as from sudden fright, and the expression of the countenance undergoes repeated changes.

The general and local disturbances accompanying dentition, are, however, often of so slight a character, as to require no attention, or to escape notice altogether. This is most apt to be the case in children whose constitutional habit is healthy, and who have been nourished with mild and appropriate food, and in whom the advance of the teeth through the gums is attended with a free secretion of saliva, and moderate looseness or diarrhœa. These evacuations are, in general, decidedly salutary. The free discharge of saliva has a direct tendency to relieve the irritable and congested capillaries of the gums and mouth, and to derive the blood from the brain, and moderate its irritative condition. The diarrhœa may prove beneficial, by "determining the circu lation from the head to the intestines, and particularly by its effects in lessening the quantity of blood in the system, and diminishing the strong action of the heart and arteries."

Even the most favorable instances, however, are attended with an increased susceptibility to the injurious influence of irritating or exciting causes; and hence all diseases, whatever may be their cause or origin, are apt to assume a more violent character during dentition than at other periods. There can be no doubt that many complaints, which at other periods would have terminated favorably, often acquire a fatal violence from that irritable and irritative condition of the system, which attends difficult dentition. From this circumstance, as well as from the direct tendency of dentition to originate violent affections, the period during which this process is going on, is justly regarded as one of the most perilous stages of life. It has been computed that one tenth, at least, of all the deaths which occur during childhood, may be fairly ascribed to dentition; and it does not appear to me that this is an exaggerated estimate.

When the gums become inflamed, swollen, and painful, and the secretion of saliva scanty, with torpor of the bowels, the whole organization, generally, sympathizes strongly with the local affection, and the nervous system especially is liable to great and dangerous irritation. Indeed, when from the influence of previous morbific causes, the system has become feeble, and unnaturally irritable, the most alarming consequences sometimes result from the irritation of the advancing teeth, before any signs of irritation and inflammation are discoverable in the gums.

Among the various circumstances which are apt to render dentition difficult and dangerous in its consequences, a deranged or dyspeptic state of the digestive organs, from errors in diet, is probably the most common and pernicious in its tendency. Children who are nursed exclusively at the breast, are, in general, much less apt to suffer inconvenience or disease, from dentition, than those who are either wholly, or in part, nourished with artificial food. When the digestive organs are habitually disordered, from the use of inappropriate articles of food, the risk of serious consequences from dentition is always very considerable. The general system, usually, becomes enfeebled and morbidly irritable, by a continued course of improper nourishment; and in this condition the local irritation of the advancing teeth is not only peculiarly apt to give rise to general irritative affections, but by its reaction on the stomach and bowels, adds also greatly to the disordered state of these organs, and ultimately, often produces violent and highly dangerous affections. In robust and healthy children, the use of stimulating articles of nourishment and drink is calculated to do much injury, in this respect, independent of its tendency to derange the digestive organs, by increasing the phlogistic condition of the system, and promoting the occurrence of febrile and inflammatory affections, from the local irritation in the gums. A close and contaminated atmosphere, more especially when aided by high temperature, has a decided tendency to increase the difficulty and morbid consequences of dentition.—Children who reside in populous cities, or who are much confined to close and ill-ventilated apartments, are much more liable to unpleasant consequences from teething, than those who enjoy the pure and salubrious air of the country. The tendency of inactivity, impure air, and high atmospheric temperature, to increase the irritability of the system, and predispose it to the injurious influence of irritating causes, is well known. Dentition can seldom go on without giving rise to considerable disturbances in the system, where these causes are in full and continued operation during the process. The practice of keeping the heads of infants very warm, by flannel caps, or "sleeping on very soft pillows, which nearly envelop their heads," may do injury during dentition, by favoring the determination of blood to the head, and thereby increasing the liability to inflammatory irritation of the brain, &c.

The morbid, sympathetic effects of difficult dentition are very various. In robust, full, and otherwise healthy infants, the general disturbances, usually, consist in slight febrile irritation, particularly towards night, attended with a frequent, quick and sharp pulse; a very warm and somewhat dry skin, more or less costiveness, increased thirst, flushed cheeks, dull and heavy eyes, and a fretful and irritable temper. Cases of this kind are seldom accompanied with a copious secretion of saliva; on the contrary, the free discharge of this secretion, or the supervention of moderate diarrhœa, almost invariably mitigates the general irritative condition, to a very obvious degree. In some instances, the brain sympathizes so strongly with the local affection, as to give rise to the usual phenomena of incipient arachnitis or acute dropsy of the head. In cases attended with this state of cerebral erethism, the child generally sleeps with its eyes half open, a circumscribed flush frequently appears on one or both cheeks, the eyes become slightly injected, and unusually sensible to light; the eye-brows are often contracted into a peculiar frown, accompanied with a discontented and anxious expression of the countenance; and the child is extremely fretful and irascible; when asleep, it often starts suddenly and screams out violently, or moans as if in pain; it is frequently observed to raise its hands and press them against the forehead; vomiting is apt to occur on rising suddenly from a recumbent to a sitting or erect posture, or after taking stimulating articles of nourishment; and the bowels are almost invariably in a disordered condition, being either torpid, or disturbed with griping, colic-pains and diarrhœa. The pulse is frequent, quick, and contracted—the temperature of the skin variable, the hands and feet being, at times, remarkably cool, whilst the head and body are preternaturally warm. Cases of this kind are always attended with considerable danger. When neglected or mismanaged, particularly in relation to the diet, they are apt to terminate in fatal oppression of the brain, from effusion into its cavities and upon its surface, or disorganization of its structure.

In some instances of difficult dentition, attended with an irritated condition of the brain, a remarkable swelling occurs on the hands and feet, which as the case advances, generally becomes associated with symptoms of alarming and frequently fatal nervous irritation. This swelling "has a considerable degree of roundness and elevation, and looks like that sort of tumor which might rise, on the same parts, from a blow or contusion. It seems to arise suddenly, as it has, generally, this roundness and elevation, from the time of its first attracting observation." When first observed it has somewhat of a mottled, lived, and purplish color, resembling the chilled hand of a full and healthy child after exposure to a cold and frosty atmosphere. It feels cold, at least it has no inflammatory heat and does not appear to be morbidly sensible, or to give any pain to the child when handled. It does not pit on pressure, but rather gives the sensation of firmness and resistance. The swellings are confined to the anconal aspect of the metacarpus of the hands, and the rotular aspect of the metatarsus of the feet, terminating abruptly at the carpus and tarsus. The duration of these tumors is very various in different cases. Sometimes they disappear in three or four days—at others they continue for many weeks without either increase or diminution; and occasionally they disappear and return again, at short intervals for a number of weeks. In some cases these swellings pass off without any unpleasant or alarming consequences. More frequently, however, symptoms of a much more formidable nature ensue—consisting of a peculiar spasmodic affection commencing in the flexors of the hands and feet, and gradually extending itself until it terminates in general convulsions or tetanic spasms of the whole body. The reader is referred to the chapter "On Convulsions," in this work, where this very singular affection is fully described under the name of *Pedo-carpal Convulsions of Infants.**

The occurrence of convulsions from difficult dentition is very common. When they come on suddenly, and are attended with a full and flushed countenance, they are in general, much less dangerous, than when they are preceded, for some time, with symptoms of active cerebral irritation, and accompanied, with a pale and contracted aspect of the countenance. Cases of the former kind generally depend on simple irritation and vascular turgescence of the brain; whereas the latter are often connected with slow meningeal inflammation, effusion, or disorganization of some portion of the brain. When the child remains in a state of stupor or partial insensibility, with its eyes half open and turned up under the upper lids, for a considerable time after the paroxysm has subsided—and particularly when along with these symptoms, the respiration is very irregular with an occasional deep moaning sigh, and a very slow or extremely rapid and small pulse, the chances of a favorable termination are always extremely slender. When on the other hand the infant, soon after emerging from a fit, takes notice of surrounding objects, and breathes freely and regularly, without any particular manifestations of sensorial torpor and drowsiness, the probability of a favorable result, will be very considerable. Nothing tends more strongly to favor the occurrence of convulsions during dentition, than gastric or intestinal irritation, from the use of improper articles of nourishment, or from overloading the stomach. Children who are under the influence of difficult dentition, seldom enjoy a perfectly healthy state of the digestive organs, even under the most careful and judicious dietetic management. The stomach during this process, is often morbidly irritable, and hence errors in diet are much more apt to produce injurious consequences during this, than at any other period of life. So far as my own observations enable me to form an opinion, I am inclined to think that, the majority of instances of convulsions, usually ascribed to the sole irritation of dentition, are in fact excited by improper or immoderate alimentary ingesta. When the diarrhœa which frequently accompanies dentition is suddenly arrested by astringents, opiates &c. the liability to convulsions is always much increased, more especially in robust and plethoric infants. The same thing occurs, when from cold, or some other cause, the salivary secretion is suddenly checked or suspended, and the bowels remain costive. In general, convulsions are much more apt to occur during the eruption of the first grinders and eye-teeth, than while the incisors are making their way through the gums. This may arise, in part at least, from the circumstance that during the cutting of the incisors, children are as yet usually nourished exclusively at the breast; whilst during the latter stage of dentition, when the grinders and eye-teeth are advancing through the gums, they are generally weaned, and therefore much more exposed to gastro-intestinal irritation from improper articles of food.

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* Notes on the Swelling of the Tops of the Hands and Feet, &c. By Geo. Kellie, M. D Edinburg Medical and Surgical Jour. vol. 12. p. 449.

Various eruptions on the skin are among the most common morbid consequences of difficult dentition. Of these, the *crusta lactea* is by far the most disagreeable and unmanageable. That this affection is intimately associated with dentition, is manifest from the fact, that it very rarely makes its appearance previous to the commencement of dentition, and never, I believe, after the process has been completed. Excoriations behind the ears, and the various species of strophulus—particularly the strophulus confertus or tooth rash, are, also, very common during this period of infancy. The Strophuli are almost invariably accompanied with derangement of the digestive organs, and diarrhœa; but the two former affections, namely crusta lactea and excoriations about the ears are generally attended with a strong appetite and considerable torpor of the bowels.

Infants are also liable to a peculiar croupy affection during dentition, which is evidently of a spasmodic character, and dependent on cerebral irritation. In some instances, the singular swelling of the hands and feet mentioned above, becomes associated with occasional attacks of this croupy affection, about the time that the disease is assuming a distinctly spasmodic character. This form of croup, which has been aptly called "cerebral croup," is most apt to come on at night or early in the morning. It is attended with extremely difficult respiration and the hoarse and sonorous cough of ordinary croup. The attack is always very sudden, and generally of short duration, seldom continuing beyond fifteen or twenty minutes, and often not above a minute or two. I attended a child about three years ago, which, during the eruption of the eye teeth, was seized with an attack of spasmodic croup, almost every night, for six or seven weeks. As soon as the eruption of the eye-teeth was completed, the croupy affection ceased to recur. Under the head of croup, this singular malady is more circumstantially described. Slow and difficult dentition is sometimes attended with a very troublesome spasmodic or "nervous" cough, which comes on in sudden and violent paroxysms, at irregular and sometimes remote intervals. The breathing during the fit, is oppressed and suffocative; and the cough usually continues until the contents of the stomach are thrown off. At night the child is generally very restless, and the breathing peculiarly irregular, being now, extremely hurried and short, and then, slow, interrupted, sighing and moaning. In several remarkable cases of this kind—one of them in my own family,—the urinary secretion was unusually small, and frequently voided with evident pain. The cough generally continues to recur, until the teeth are all cut. I have never known it to continue after this process was completed. In many cases of spasmodic cough during diffi cult dentition, the principal irritation is evidently located in the stomach. In these instances, the epigastrium is distended, the stomach and bowels disordered and the alvine evacuations glairy and bilious. The fits of coughing are most apt to occur a short time after taking nourishment, and they usually continue until the greater part of what was received into the stomach, is thrown off by vomiting. There is seldom much saliva secreted in cases of this kind, and the tongue, generally, presents a bright red color along the edges and point, with a coat of thin white fur along its middle.

In some instances, of painful dentition, the urinary organs sympathize strongly with the local irritation in the gums. This is most apt to be the case, when the digestive powers are weak, and the primæ viæ habitually charged with acidity. The connection between habitual acidity in the stomach and bowels, and urinary difficulties, has already been pointed out in the chapter on "*Dysuria*." The urine, in such cases is often loaded with an excess of lithic acid, or its compounds, and, on this account frequently so irritating, as to give rise to severe burning pain in the neck of the bladder and urethra on being voided. Occasionally, however, an opposite condition of the urine obtains. The urinary deposits are alkaline or earthy, and the urine is secreted in great abundance, assuming the character of diabetes insipidus. This latter condition of the urine, is seldom attended with any manifestations of febrile irritation; the hands and feet are usually cool, the system relaxed and languid, and the countenance pale and expressive of distress or suffering.

Fever, as has already been stated, is perhaps the most common sympathetic affection of difficult dentition. It seldom, however, assumes a vehement character, unless there are other sources of febrile irritation present. It is generally slow, irregular, changeable, intermitting or remitting—presenting the usual phenomena of chronic irritative fever, from slight local affections. The majority of instances of fever that occur during dentition, are excited, or at least greatly promoted by other causes. In that irritable state of the system, which usually attends the progress of the teeth through the gums, a slight accession of other sources of febrific irritation, will give rise to fever.

Management.—Throughout the whole course of dentition particular care should be taken to avoid every source of undue excitement or irritation. Even the most regular and mild cases are usually attended with an increased susceptibility to the influence of exciting or irritating causes. The stomach and bowels, especially, are apt to acquire an increased predisposition to the injurious operation of causes of this kind. Slight errors in diet are apt to disorder the digestive organs, during this period; and the occurrence of gastro-intestinal irritation is always peculiarly unfavorable to the easy progress of dentition. In all instances, therefore, the diet ought to be as simple and unirritating as possible. If the nurse furnishes a sufficient quantity of wholesome milk, nothing but this congenial nourishment ought to be allowed during the first period of dentition—that is until all the incisors at least, are protruded. Weaning should never be effected during the active progress of dentition. In general the most favorable period for weaning, is soon after all the incisors have made their appearance. Should it become necessary to resort to the use of artificial nourishment, in addition to that obtained at the breast, nothing can be more appropriate than the simple mixture of milk and water mentioned in the chapter "On the Nourishment of Infants." All solid articles of food ought to be rigidly avoided—more especially during the primary stage of dentition. After all the incisors have made their appearance, the child may occasionally take small portions of oatmeal gruel, crackers grated and dissolved in warm milk and water, barley water, and liquid preparations of arrow root, tapioca, or sago, provided the general and local irritation be not considerable. Moderation as to quantity also, is an important requisite to the proper dietetic management of infants during dentition. A full diet may do harm by increasing the general plethora and febrile tendency of the system, or by oppressing the digestive organs and giving rise to a disordered state of the stomach and bowels. The great objects to be kept in view, while dentition is going on, is to guard against every thing which may have a tendency to render the child feeble and morbidly irritable, or increase the fulness and inflammatory diathesis of the system.

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Regular exercise by gestation in the open air, has an excellen prophylactic tendency during dentition. When the weather is sufficiently mild and dry, the infant, if free from fever, ought to be daily exercised in the fresh and open air, by carrying, or riding it in a carriage. Inactivity and confinement to an impure and stagnant atmosphere are decidedly unfavorable to the easy and undisturbed progress of dentition. Children who enjoy suitable exercise, in the salubrious air of the country, almost always, pass through this period, with less inconvenience and danger than those who are confined to the contaminated atmosphere of populous cities. It is to be observed, however, that exercise is not recommended in cases attended with distinct fever, or with a decided tendency to secondary inflammations. It is to be regarded as a preventive measure—as a means for *avoiding* the occurrence of morbid irritability, and irritation, rather than for removing them when once developed. With this view, much benefit may unquestionably be derived from it. When aided by the influence of a salubrious air, it tends, in no small degree, to fortify the general powers of the system, and to prevent that feeble and irritable condition, which is so apt to occur during difficult dentition, and so favorable to the occurrence of alarming irritative affections.

Care should also be taken to avoid, as much as possible, every thing that may cause a preternatural determination of blood to the brain. The head ought to be kept cool. During warm weather, no caps should be worn; and at night, or when sleeping, the head should be suffered to remain uncovered. A very soft and large pillow of feathers, so as to cause it to lap round the infant's head, is particularly improper. The head must also be carefully secured from the direct rays of the sun when the child is carried out into the open air. A light straw hat, is decidedly the best covering for infants during the warm seasons. During cold weather caps, made of very thin materials may be worn within doors; and when the child is taken out, its head should be further protected against the cold, by a thin cloth cap, while the feet are kept as warm as possible by thick flannel stockings and shoes.

Costiveness must be obviated by enemata, and the occasional administration of a mild purgative. Much care is required, however, lest, in the anxiety to remedy this state of the bowels, a more serious one be not substituted, by harsh and repeated purgations. I am certain that I have seen much harm done in this way. At no period of life, perhaps, are strong purges, so apt to give rise to intestinal irritation, as during the active progress of dentition. Habitual costiveness during dentition, is very generally attended with a deficient secretion of bile. The stools frequently present a whitish or clay-colored appearance and the urine is usually loaded with bilious matter. In cases of this kind, a small portion of calomel should be given every third or fourth evening and a moderate dose of castor oil or magnesia on the following morning. From one to two grains of calomel, will in general suffice for this purpose. During the intermediate periods purgative enemata ought to be administered, so as to procure at least two free evacuations every twenty-four hours. Small doses of epsom salts dissolved in some bland and slightly mucilaginous fluid forms an excellent laxative in cases attended with febrile irritation. In the employment of calomel during dentition great care should be taken, that it be not carried to the extent of inflaming the gums, or producing a general mercurial action on the system. I have witnessed several highly distressing instances of extensive ulceration and sloughing of the gums and cheeks, in consequence of the incautious employment of calomel, while the system was under the influence of dentition.

If moderate diarrhœa occurs, it ought not to be checked or arrested, unless the child be in a very feeble condition from previous sickness. But even in this case, it should always be subdued in a gradual and gentle manner. Its tendency, as has already been stated, is in general, decidedly favorable, both by moderating the general febrile disposition of the system, and by counteracting the preternatural flow of blood to the head. When suddenly arrested by opiates or astringents, the local and general disturbances seldom fail to acquire a more severe and dangerous character. Convulsions, fever, and inflammatory affections of the brain, are among the evil consequences which are apt to result from the injudicious interference with the diarrhœal affection. In many instances, however, the diarrhœa assumes so violent a character as to exhaust and disorder the system to a very dangerous extent. In cases of this kind, remedial assistance is indispensable. When ever the system is obviously debilitated and relaxed by this affection, measures should be adopted to moderate its violence. Unless the necessity of prompt and energetic measures be decidedly indicated, the excessive action of the bowels ought to be moderated in a gradual manner; and when the complaint can be reduced to a mild state, no attempt should be made to arrest its course wholly. Small doses of ipecacuanna, in combination with prepared chalk and minute portions of calomel, have, in general, succeeded better, in my hands, in cases of this kind, than any other remedy. A powder composed of a fourth of a grain of ipecacuanna, one sixth of a grain of calomel, and four or five grains of prepared chalk, should be given every three or four hours until the diarrhœa is sufficiently moderated. By continuing the exhibition of two or three doses daily, the complaint may generally be kept in a sufficiently moderate state, until the advancing teeth are protruded. I have rarely known a violent case of diarrhœa wholly arrested during the active progress of dentition, without an obvious increase of the general and local irritation. In cases of decidedly difficult dentition, attended with an irritated state of the nervous and vascular systems, it is generally extremely difficult to manage the diarrhœa without either suffering mischief from the exhausting effects of the bowel complaint, or aggravating the general and local irritative affections by giving it too great and sudden a check. A striking example of the correctness of this observation occurred to me not more than ten days ago. The infant was cutting the first molares, with considerable difficulty, though nothing of a dangerous character occurred except a diarrhœa, which in a short time became extremely violent and prostrating. I prescribed the above powders of ipecac, chalk and calomel, which had the effect of moderating the complaint considerably, though not to a sufficient extent. As this remedy did not seem to do any further good, I advised a decoction of the root of geranium maculatum in milk. This was given, and the bowel complaint was soon entirely arrested. In about ten hours after the complaint was thus stopped, a violent paroxysm of convulsions occurred, which terminated in a torpid or comatose condition; and although an active purgative and repeated enemata were administered, a second fit of convulsions ensued and terminated the life of the little sufferer.

The child's mouth ought to be washed out with fresh water every morning. This is always very grateful, and tends to moderate the uncomfortable heat and irritation of the mouth. The practice of putting some hard substance into the child's hands, to press and rub its gums with, is proper, and should never be neglected. A piece of smooth coral, ivory, orris root, or firm-grained wood may be used for this purpose. The substance ought to be smooth or polished, and of such a size and shape as to enable the child to hold it firmly with the hand, and prevent its slipping back into the fauces or throat. An ivory ring, about an inch and a quarter in diameter, is an excellent contrivance for this purpose. The ring may be suspended round the child's neck, so as to be always within its reach. This practice has been condemned by some writers, on account of its supposed tendency to harden the gums, just as the soles of the feet and palms of the hands are indurated by much walking and manual labor. This apprehension is, however, entirely unfounded. The tendency of compression and friction is rather to promote the absorption of the gums, than to consolidate and render them more resisting to the advancing teeth. Indeed the instinctive and apparently irresistible propensity which all children manifest to press and rub their gums firmly, upon every thing they lay hold of; and the very obvious relief and gratification which they derive from it, may be regarded as a sufficient warranty that the practice is not only harmless, but decidedly beneficial and desirable. Friction and pressure manifestly moderate the painful sensations of the gums; and they may do good, also, by promoting the free secretion of saliva, and thereby diminishing the heat and irritation of the mouth.

From time to time, the gums should, in all cases, be carefully inspected; and when found to be in an inflamed and swollen condition, they ought to be promptly and freely divided with a lancet, even though no unpleasant consequences be produced by the local irritation. When the gums are in this condition, a slight, additional exciting cause, will be apt to give rise to dangerous affections. An error in diet, an accidental derangement of the digestive organs, or a slight cold, may bring on an attack of convulsions, of fever, or of profuse and exhausting vomiting and purging. By a timely division of the inflamed and swollen portion of the gums, the liability to consequences of this kind, will be much diminished. During the actual presence of these and other affections depending on difficult dentition, a division of the gums should, on no account, be neglected, if they are manifestly distended, or in a state of inflammatory irritation. The diseases of dentition appear to depend, mainly, on the distention of the membrane investing the crown of the teeth, and pressure upon the pulp, nerves and vessels at the bottom of the socket, in consequence of the resistance which the advancing teeth experience, from the tension and firmness of superincumbent gums. By dividing the gums, this pressure and distension is moderated, and if no other exciting cause be present, speedy and important relief will frequently ensue. Little or no advantage, however, can be expected from this operation, so long as the edge of the gums is sharp and wholly free from inflammation. It is not necessary, indeed, that there should be distinct swelling and inflammation present, to render this measure proper or useful. If the part over the advancing teeth is expanded, or thickened and tense, relief may be expected from the operation, although no decided marks of inflammation be present—in other words, if the teeth have approached near the surface, and unpleasant or alarming sympathetic affections occur, it will be proper to divide the gums freely. "Under every circumstance, of indisposition arising from dentition, the lancing of the gums ought never to be omitted. As soon as the gum is lanced, and the membrane is divided, the tooth obtains an increased room, the pressure is immediately taken off from the socket, and the cause of the irritation is removed" (Fox).

In reply to the objections that have been urged against the propriety and usefulness of this operation, I offer the following remarks from the writer just quoted. "It is very surprising, that notwithstanding the manifest advantage, which attends the lancing of the gums, in cases of painful dentition, there are persons who entertain strange prejudices against this safe and important source of relief. But the uniform experience of its good effects, and no instance of its doing harm ever having occurred, should produce an unanimous consent for adopting it. Some persons object to the operation, on account of the pain which it will occasion to the child, not considering that the inflammation produced by the resistance of the gum to the tooth, is far more acute, than dividing the gum with a sharp instrument. Others suppose that the formation of the teeth is injured, and that they are more liable to decay; but neither of these circumstances can occur; for at the time the tooth is about to pass through, the enamel is completely formed, and no injury can be done to the formation of the fang, which is always continued for some time after the appearance of the crown."

"When it is necessary to lance the gums sometime before the teeth are quite ready to appear; they unite, and in this case the cicatrix has been said to impede the progress of the tooth, presenting a greater resistance than the gums, in their natural state; but it is now certainly known that a newly formed part, or cicatrix, always gives way sooner to the process of absorption than the surrounding parts, and hence the passage of the tooth is facilitated. The hemorrhage which is occasioned by the operation, is scarcely ever considerable, but is always beneficial: the vessels become unloaded, and the inflammation is always soon diminished."

Under an idea that the cicatrix may impede the protrusion of the tooth, some advise that the division of the gums should be made at the side near the edge, rather than directly over the crown of the advancing teeth. This, however, is not only unnecessary, but unfavorable to success. The incision should be made in the direction of the gums, and immediately over the crown of the teeth. A single incision will be sufficient for the incisors; but when the molares are near protruding, and the gum is swollen and tense, a crucial incision may be advantageous. Mere scarification can afford but little advantage. The gums must be freely divided, down to the teeth. The principal difficulty arises from the distension of the firm membrane stretched over the teeth; and unless this be divided along with the gums, the operation will fail to procure the full benefit which it is capable of affording.

When *convulsions* occur during dentition, the gums should be immediately divided if they exhibit any signs of inflammation or distension from the advancing teeth. Some writers recommend this operation in all instances of convulsions, while the process of teething is going on, whether marks of irritation or distension the gum be present or not. "The advantages of this operation are so great," says Underwood, "that whenever convulsions take place about the usual period of dentition, recourse ought always to be had to it, though by an examination of the gums there be no certain evidence of the convulsions being owing to such a cause. At any rate the operation can do no harm, even at any period; and should the shooting of teeth be only an aggravation of the true cause of the disease, lancing the gums must be attended with advantage." I am, however, convinced from experience, that cutting down through the gums, at so early a period, is always entirely useless; and I have known very troublesome and even alarming hemorrhage to occur from a deep incision, while the teeth were yet far from protruding, and the gum wholly free from the enlargement or distention which accompanies the advanced stage of dentition. It is not necessary, however, that there should be obvious inflammation and swelling present, to render this operation proper, or likely to afford benefit. Whenever, from the fulness of the gum, it appears that the tooth is near the surface, a free incision should undoubtedly be made, if convulsions or other alarming affections supervene. For a full account of the mode of managing convulsions from dentition, the reader is referred to the chapter "On Convulsions."

Should the child become affected with cutaneous diseases, while under the influence of dentition, the utmost caution ought to be observed, in the employment of external remedial applications. This is particularly important, in relation to discharging sores behind the ears, and scabby eruptions about the head. The application of astringent, drying, or repelling substances, may lead to the most violent and dangerous consequences. Indeed these affections, like the copious secretion of saliva, may have a favorable effect, by deriving the irritation and preternatural flow of blood, from the brain and other internal organs. If the external affection be suppressed, the sympathetic irritation will not be subdued, but only transferred to some other part of the system. If it falls on the brain, as it often does, convulsions, or meningitis (dropsy of the brain) may be the result; if on the lungs, severe pneumonic or cynancheal affections may be the consequence; and, if the stomach and bowels receive the introverted irritation, rapid and unmanageable diarrhœa or cholera, will probably ensue. This is no imaginary view of the evil consequences that may result from an improper meddling with eruptive affections of a scabby or humid character, about the head, during dentition. I have witnessed some very striking examples of this kind, in the course of my practice. An instance occurred to me about eight months ago. During the active progress of dentition, a scabby and discharging eruption occurred on the cheeks, forehead, and behind the ears. I directed simple means, merely with the view of moderating the irritation and keeping the parts clean, and urged the impropriety of applying any thing calculated to dry up or remove the disease. The mother nevertheless, could not content herself with seeing the infant's face in so disagreeable a state, and, of her own accord, used astringent washes and other means, to remove the affection. In about a week after these applications were used, I was again called to prescribe for the child. The eruption was now almost entirely removed; the little patient was feverish and extremely restless and fretful. Suitable remedies were resorted to, but in opposition to all my efforts, the disease rapidly increased, and terminated in fatal coma, paralysis, and convulsions. See the chapters on "*Crustea Lactea*" and on "*Sore Ears*," for further directions on this subject.

The application of blisters behind the ears, or on the back of the neck, is often of essential service in the diseases that arise from difficult dentition. When symptoms of cerebral irritation supervene—such as great fretfulness, flushing of the cheeks, a warm and dry skin, starting and restlessness during sleep, and unusual sensibility of the eyes to the light, the timely application of blisters behind the ears, or on the back of the neck, may prevent the development of inflammation in the brain or its meninges, or obviate an attack of dangerous diarrhœa, convulsions, &c. &c. In violent and obstinate diarrhœa, from dentition, I have often derived unequivocal advantage from this practice. Whatever is calculated to diminish cerebral irritation, or to lessen the determination of blood to the brain, may be usefully applied, in the sympathetic diseases of dentition; for, with the exception of eruptive affections, they are almost always dependent on, or at least connected with and aggravated by, cerebral irritation. In the sudden convulsive affections, which are so apt to occur during dentition, immersing the feet and legs in warm water, and applying a cloth soaked with cold water to the head, is, in general, more certain and prompt in procuring relief than any other remedy we possess. The simultaneous application of cold to the head and warmth to the feet, has a powerful tendency to diminish sanguineous congestion and inordinate excitement in the brain. These two applications should always go together when the brain is in an irritated and congested condition. The propriety of keeping the bowels in a loose state during dentition, has already been mentioned. When violent affections supervene, or when there are indications of the approach of serious sympathetic disorders from dentition, and diarrhœa does not attend, great benefit may frequently be obtained, from active purgatives. By stimulating the bowels in this way, and directing the circulation and excitement upon them, the brain will be relieved, and the diseases depending on its irritated condition either prevented or mitigated.

When the gums become ulcerated, before the teeth are protruded, they should be lanced, and touched occasionally with a solution of sulphate of copper, or of the nitrate of silver. Four grains of either of these articles, dissolved in an ounce of water, and applied with a dossil of lint, forms an excellent application in cases of this kind. A decoction of the root of *coptis trifoliata*, (golden thread), has frequently done much good in my hands, in ulcerated gums.

[In those cases which do not justify the operation called *lancing* the gums, it is often beneficial to scarify, just so far as to cause a hæmorrhage from the parts. This depletes sufficiently to afford relief, and the little sufferer will sometimes fall asleep, very soon after the expedient has been tried. After, or prior to this operation, it is often very soothing to the parts to rub them gently with a soft flannel or linen rag, dipped in warm water; and this may be repeated several times in the course of the day. I have known the mere friction of the finger, long continued, to give manifest relief, and especially if it be first immersed in hot water. It is not necessary to rub the gums with laudanum, or any sort of opiate. The practice is ultimately injurious.]

CHAPTER XI.

OF THE DIABETES OF INFANTS.

Diabetes is, probably, a much more frequent disease during infancy than is generally supposed. Since it was first noticed by Moreton, in his Phthisiologia, it has received but little attention, from writers on the diseases of children. Mr. Venables, however, in his recent work on diabetes, has contributed some interesting and valuable information on the diabetic affections of children; and it is from this source, principally, that the following observations are drawn.

Infantile diabetes seldom occurs after the second year of age. Dr. Dewees states that "all the children he has seen affected with it, were under fifteen months old." It does not, however, seem apt to come on during lactation; for, according to the observations of Mr. Venables, its appearance previous to weaning is extremely uncommon.

In the commencement of the disease, the child loses its usual playful and active disposition, and, although no obvious malady be discernible, it soon becomes dull, languid and fretful, with an uneasy and anxious expression of the countenance. In a short time, its flesh begins to waste; and as the emaciation gradually increases, the skin becomes dry, harsh, and so flabby, that "it seems, at length to hang loosely about the body." During the early stage of the disease, "the bowels are regular, and little or no deviation from the natural and healthy appearance of the alvine discharges is to be noticed." The tongue, too, exhibits a natural appearance, in the beginning, but in the advanced stage of the disease, it always becomes more or less conspicuously covered with a coat of white fur, or thick transparent mucus. After the disease has made considerable progress, the bowels begin to act irregularly, and the alvine discharges acquire an unnatural, and, generally, bilious appearance. The skin becomes uniformly dry and very warm; and emaciation goes on with increasing rapidity. The pulse is at first somewhat accelerated, becoming small, quick, hard and wiry, as the disease advances in its course. The abdomen, gradually becomes more and more distended, and tense,—a symptom which in connection with the progressive emaciation, "frequently leads to the supposition of mesenteric disease." In the advanced stage of the complaint, the brain generally becomes more or less affected. "Headach, vertigo, and temporary delirium occasionally attend, and when a fatal termination takes place, the patient usually dies comatose and sometimes apoplectic." A considerable degree of fever, generally prevails during the latter periods of the disease; and in cases of long continuance, anasarca, and even general dropsy have been known to occur. "The most remarkable occurrence, however, although it frequently escapes observation, is the inordinate discharge of urine. This discharge increases in quantity so gradually, that it is not usually noticed. By the time it has become more remarkable, great thirst prevails, and hence it is neglected or unnoticed, because parents and friends conceive an excessive discharge of urine and an excessive consumption of fluid as naturally associated." The qualities of the urine vary in different cases. In some instances the urine is perfectly limpid, without any sedimentous matter, or deposit; in others "it is milky, or like a mixture of chalk and water." Occasionally the urine is transparent, and "of a pale straw color;" and Mr. Venables saw a case in which it was of a green color. It appears, frequently, to contain a considerable portion of coagulable serum; and when the proportion of the coagulable matter is great, and the urinary discharge very copious, "the emaciation is always rapid and extensive."* Mr. Venables does not mention the occurrence of a saccharine condition of the urine, in infantile diabetes. In the case related by Moreton, the urine was very perceptibly sweet: I have myself witnessed three very distinctly formed cases of infantile diabetes, in all of which, the urine, though extremely copious, was perfectly insipid.

There is reason to believe, as is observed by Mr. Venables, that many cases that have been regarded as instances of dropsy in the head, marasmus, and mesenteric disease, were in reality cases of diabetes. I am the more persuaded of the correctness of this observation from the error which I committed myself, in this respect, in the first case of this kind I witnessed. The child appeared to me to be laboring under mesenteric disease, and after having treated the case as such, for three or four weeks, the mother casually observed, that the little patient passed a great deal of urine. I now directed my attention to this circumstance, and soon satisfied myself that the quantity of urine discharged was truly excessive. In the course of twenty-four hours, three pints of urine were collected, and much was discharged at night, as well as during the day, that could not be collected. The urine was clear, and of a pale straw color, but I neglected to ascertain whether it contained any coagulable matter. The infant was but fifteen months old. Infantile diabetes is, indeed, very rarely recognized, in its incipient, or early stage; "and when it has made considerable progress, it simulates so many other diseases, that the real character of the complaint is not developed till its history is either wholly lost, or so confounded with symptomatic or secondary affections, that it can no longer be unravelled." Too little attention is, in general, paid to the urinary secretion, in the diseases of children. In maladies of a protracted character, attended with emaciation, and a general irritative condition, the urine ought always to be carefully inspected. There can be no doubt that serious derangements of this secretion often occur in children, without being suspected. I was quite recently called into consultation, in the case of a child about eighteen months old. It appeared languid, and was much emaciated; its bowels were irregular, the stools slimy and mixed with green bile, and it was evidently harassed with constant thirst. In this case the urinary secretion, on proper inquiry, was found to be preternaturally copious. It could not indeed be regarded as an instance of diabetes; but the quantity of the discharge was such, that it could not fail to contribute materially to the exhaustion and emaciation of the little patient, and manifestly required particular attention in the remedial management of the case. The urine in this patient contained a considerable portion of sedimentous matter of the phosphatic variety. From what I have observed in relation to the urinary affections of children, I am induced to think, that infantile diabetes is frequently attended with an excess of the earthy phosphates in the urine. This state of the urinary secretion, says Prout, "frequently occurs in sickly children, in whom the functions of the digestive organs are deranged;" and it is well known, that where this condition of the urine prevails, "symptoms very analogous to those of diabetes are apt to supervene." From the connection which is known to exist between an *excess of urea* in the urine, and the symptoms usually denominated *diabetes insipidus*, in adults, there can be no doubt that a similar state of the urine is sometimes present in the diabetic affections of infants. This disease may, moreover, be associated with an albuminous or coagulable condition of the urine, since this state of the secretion is sometimes attended with profuse diuresis, at a more advanced age. These circumstances are worthy of notice; and when properly estimated, may aid considerably in instituting a proper course of treatment; for it cannot be doubted that these different conditions of the urine require corresponding modifications of remedial management.

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* A Practical Treatise on Diabetes; with Observations on the *tabes diuretica*, or Urinary Consumption, especially as it occurs in Children, &c. By R. Venables, M. B. &c. p. 5-16

Treatment. In the treatment of this affection, much will of course depend, on the character of the urinary secretion. In cases attended with a saccharine state of the urine, recourse must be had to those means which experience has ascertained to be most beneficial in diabetis mellitus. Instead of the usual farinaceous or milk diet, the nourishment should consist principally of the lighter and more digestible kinds of animal food. If febrile symptoms attend, it may be beneficial to apply six or seven leeches to the lumbar regions. Mild aperients, and the occasional use of the warm bath, will be proper. Opiates are often decidedly beneficial in this affection—more especially in the form of Dover's powder. To a child between one and two years old, a grain of this anodyne mixture, with, or without three or four grains of powdered uva ursi may be given two or three times daily. In the diabetes of adults, Mr. Latham used opium and the carbonate of iron with decided advantage; Mr. Venable speaks very favorably of the effects of phosphate of iron, in this complaint. *Magnesia*, given in small and repeated doses, has proved serviceable; and Richter mentions a case of diabetes, in a child, which yielded to a course of emetics.

It is but very rarely, however, that the urine is sweet in the diabetic affections of infants. In the ordinary forms of the disease, mild laxatives, in alternation with Dover's powders and uva ursi, will often procure relief. Small doses of the bi-carbonate of soda, in union with two or three grains of the carbonate of iron, may be resorted to with a prospect of advantage. When the urine deposits a whitish sediment, hyoscyamus, or laudanum, with uva ursi will sometimes prove beneficial. In one of the cases referred to above, I prescribed a solution of the extract of hyoscyamus, in the proportion of one scruple to an ounce of water, in conjunction with infusion of uva ursi, with manifest advantage. Five drops of the narcotic solution, with a teaspoonful of the uva ursi tea, were given three times daily. Dr. Dewees cured several cases by "keeping the bowels freely open, and putting a quantity of the spirits of turpentine upon the clothes of the chidren, so as to keep them in a terebinthinate atmosphere. I have seen much good done in a case of this disease, by a turpentine plaster laid over the region of the kidneys. When the disease has advanced so far as to be attended with much intestinal disorder, and a tumid and tense state of the abdomen, considerable benefit would probably be derived from the internal use of small doses of balsam copaiva, or spirits of turpentine, with an occasional mercurial laxative. In this aggravated state of the disease the diet should consist of the simplest and blandest farinaceous preparations. Where the digestive powers are good, and there are no manifestations of intestinal irritation, beaf tea or weak chicken broth, mixed with the usual farinaceous nourishment, or a portion of milk, will generally prove most beneficial. The gums should always be attended to, and if they are swollen and the teeth are near protruding, they ought to be divided or scarified with a lancet. When the child is fretful, and evidently harassed by painful sensations about the head and gums, small blisters laid behind the ears will sometimes procure much relief, and aid materially in removing the diabetic affection. In every variety of this disease, it is of much consequence to promote the action of the cutaneous emunctories. The warm bath, and frictions with dry flannel, repeated at proper intervals, are very suitable remedies for this purpose.

CHAPTER XII.

OF THE ERYSIPELAS OF INFANTS.

INFANTS are liable to a peculiar erysipelatous inflammation, of a very obstinate and dangerous character. It usually comes on within a few days after birth, and occurs but very rarely after the fourth or fifth week. Dr. Dewees mentions two cases, which came on at a much later period—one after the third and the other after the sixth month. I have witnessed but one instance of its occurrence after the eighth week, and not more than three after the third week. Richter states that children have been born with blotches of erysipelatous inflammation so far advanced as to exhibit vesications and spots of gangrene. I saw a fatal case, about ten years ago, which had come on within five or six hours after birth.

The inflammation generally commences, on the lower parts of the body, particularly about the nates, groins, and umbilicus, in the form of a small red blotch, and gradually spreads, irregularly, over the abdomen and along the back and inside of the thighs. The inflamed part is firm and extremely painful to the touch, presenting a swollen, dark-red or purplish surface of irregular shape. Generally, towards the end of the first day, large but thinly scattered vesicles appear, having inflamed livid bases, tending sometimes rapidly to sphacelus. In some instances vesication does not occur until the disease has continued for several days; in others, the vesicles make their appearance, soon after the inflammation is established. Occasionally no vesication occurs throughout the whole course of the inflammation. When the inflamed part vesicates early, the disease generally spreads very apidly and soon acquires an extremely dangerous condition. The tendency to gangrene in infantile erysipelas is, indeed always very considerable, except, perhaps, in those mild cases, which remain free from blistering—a form of the disease, however, which is unfortunately, not often met with. The disposition to sphacelus is particularly great, when the inflammation is seated on the abdomen; when it affects the extremities, it is more apt to terminate in ulcerative suppuration of the subcutaneous cellular structure, but this occurs also, frequently, on the body, particularly about the nates and loins. The pus formed is generally very thin, of a greyish color, and frequently somewhat acrid and sanious. It travels along through the meshes of the cellular membrane, under the skin and between the muscles, until this tissue (the cellular) is almost entirely destroyed in the affected part. Small portions of the skin, finally slough off, and give exit to the confined matter, which is, usually, mixed with flocculi and shreds of sphacellated cellular membrane. Symptoms of intestinal and hepatic disorder, are seldom wholly absent in infantile erysipelas.

The discharges from the bowels are usually frequent, griping and of a grass-green color. In some cases, however, there is constipation, with colicky affections, and frequent ejections of acid fluid from the stomach. The whole surface of the body, often presents a slightly jaundiced appearance, and the urine is usually manifestly imbued with bilious matter.

Great diversity occurs, in relation to the violence and duration of this malady. In some instances, the inflammation passes off, in two or three days, without any very unfavorable consequences. Cases of this mild character are however very rare. Sometimes, although the inflammation is not extensive, it successively invades almost every part of the body. In its erratic passage over the surface of the body, it sometimes travels on by a continuous extension in one direction while the parts previously affected are freed from the inflammation. Occasionally, however, it leaps as it were, from one place to another, disappearing from the part it occupies, and reappearing speedily in some other and perhaps remote part of the body. In some instances the skin surrounding the inflammation, to the distance of nearly an inch from its margin, is peculiarly firm to the touch, and cannot be pinched up or moved over the subjacent parts, as may be done in a healthy state of the body.

Meckel, in examining the body of an infant that had died of this disease, found the umbilical vein, together with a considerable extent of the surrounding peritoneum strongly inflamed; and this fact, led him to believe, that inflammation of this vein, occasioned by rude management, in cutting and tying the umbilical cord, constituted the primary cause of this malady. Osiander gives an account of a fatal case, which commenced in the genitals of a male infant soon after birth. The inflammation spread itself rapidly over the whole abdomen. On dissection, he found the umbilical vein full of thick yellow pus, from the navel to the vena-porta, with other traces of inflammation in the adjacent parts. Inflammation of the umbilical vein, might, perhaps, account for the occurrence of erysipelas in the parts surrounding the navel; but even where the umbilical vein is found to be inflamed on post mortem examination, the correctness of this pathology must be very doubtful, since it is impossible to say, whether, the inflammation of the vein was primary, or the result simply of an extension of the erysipelas, from the external surface along the vein. Nevertheless, the fact, that in a very large majority of instances, the disease comes on either before or soon after the extremity of the cord is cast from the navel, leaving this part in a tender and irritable condition, together with the circumstance that the erysipelas almost always makes its first appearance on the lower parts of the body, seems to favor the idea, that this dangerous affection is frequently in some way or other connected with umbilical irritation. In some peculiar states of the system, the slightest injury of the skin is apt to give rise to erysipelatous inflammation in adults; and it is not improbable, that a similar predisposition, in co-operation with irritation about the umbilicus may be a common source of infantile erysipelas. It may be said that as this disease sometimes occurs long after all irritation about the umbilicus has passed off, this mode of accounting for its occurrence cannot be correct. It certainly cannot be presumed, that all, or perhaps even a majority of the cases are produced in this way; yet it is by no means improbable, that in some instances, at least, irritation about the navel, in conjunction with a peculiarly depraved or irritable condition of the system, constitutes the exciting cause of the disease. It is worthy of notice, that in those cases which occur at an advanced period, after the navel has acquired a perfectly firm and healthy condition, the inflammation almost always occurs on the extremities or about the head and shoulders. Irritation and functional disorder of the liver and alimentary canal has also been referred to as the primary source of infantile erysipelas. There can be no doubt, that derangement of the biliary and digestive functions frequently co-operate with other causes in the production of this malady. Symptoms of functional disorder of the liver, and digestive organs, are seldom wholly absent in this affection, and require especial attention in prescribing for its cure. We can, however, hardly ascribe much influence to hepatic and intestinal derangements as exciting causes of this affection, since functional disorders of the digestive and biliary organs are very common throughout the whole period of infancy, whilst infantile erysipelas occurs but seldom, and is, in a great measure, confined to the first three or four weeks after birth. This latter circumstance justifies the presumption, that there is something peculiar to this early stage of infancy, to which the principal agency in the causation of this malady must belong. The disordered state of the biliary and intestinal functions, is perhaps, in many instances, an effect rather than a cause of the morbid condition upon which the erysipelatous affection depends. Its unfavorable influence on the disease, however, cannot be doubted, and a principal part of the remedial treatment consists in restoring the healthy action of the liver and alimentary canal. Breathing an impure atmosphere, has a very decided tendency to favor the occurrence of this disease. It is on this account, that the disease is so much more apt to occur in lying-in, and foundling hospitals, than in private habitations. Dr. Underwood says, that he rarely met with infantile erysipelas in private practice, but repeatedly in lying-in Institutions. It has, indeed, often prevailed endemically, in crowded and ill-ventilated hospitals.

It does not appear that infantile erysipelas differs in any essential point from the erysipelas of adults. It occurs under all the modifications, as to its phenomena and progress, that it is known to assume at a more advanced age. In some instances, though very rarely, it continues for fourteen or fifteen days, with but little vesication, and no cellular suppuration. In general, however, vesicles appear very early; and in such cases, the tendency to suppuration and gangrene, is usually very great. In the majority of instances, the cellular tissue about the inflamed part becomes much infiltrated with serum. When deep incisions are made into the affected parts after death, a large portion of thin fluid issues, and the skin exhibits a firmer and thicker structure than in the natural state. In the commencement, the febrile reaction is sometimes of a high inflammatory grade; but when vesication begins, it often speedily assumes a low and typhoid character, and in many cases, the tendency to sinking is manifest as soon as the inflammation is established. The approach of suppuration is always attended with an obvious failure of the vital energies; and the instances of recovery after this has taken place are extremely uncommon.

Treatment.—Though, in the commencement, often associated with an active grade of febrile excitement, infantile erysipelas rarely admits of very decisive antiphlogistic measures. An obvious tendency to prostration often occurs almost as soon as the inflammation makes its appearance, the fever being of a typhoid character from the onset of the malady. Occasionally, however, the fever is of a high or synochal grade, and in cases of this kind direct depletion may be resorted to with much propriety. I have met with but one instance in which it appeared to me, decidedly proper to abstract blood. The infant was unusually robust; and the pulse and general appearance of the little patient, indicated a high degree of febrile reaction. The inflammation occupied the upper part of the right thigh, groin and illiac region, and had not vesicated at the end of the third day. After the use of some purgatives, I directed four leeches to be applied around the inflamed part, and the result was unquivocally beneficial. If leeches can be procured, they ought always to be used, in preference to venesection, at this early stage of infancy. It is proper to observe, that, when leeching is resorted to in this affection, the leeches should always be applied to the sound skin, surrounding the inflammation. Leeching is most apt to prove beneficial, where the erysipelatous inflammation is of an erythematous character—that is, superficial, with but little swelling and infiltration of the subjacent cellular tissue. "A trifling abstraction of blood, will be sufficient to effect every useful purpose, where this measure is indicated." It will very seldom be proper, to apply more than four leeches of the ordinary size; and, in the majority of such instances, two or three leeches will be quite sufficient. When the inflammation spreads rapidly, and is attended with vesication, the leeches should be applied to some remote part, as a general depletory measure, if the condition of the system indicates the propriety of bleeding. I am not disposed, however, to urge the employment of bleeding, whether general or topical, in infantile erysipelas, for although it may doubtless do good in some cases, yet I am entirely satisfied, that an active antiphlogistic treatment is attended with much risk of irremediable injury, even in cases that seem to warrant its adoption.

The milder antiphlogistic means--more especially laxatives, and diaphoretics are almost always decidedly indicated in the early stage of the disease. From the constant and intimate sympathy which subsists between the skin, and the mucous membrane of the alimentary canal, there can be no doubt, that intestinal irritation from acrid fœculent matter and morbid secretions must tend to support and aggravate the external erysipelatous inflammation. One of the first remedial measures, therefore, should be to evacuate the bowels freely. For this purpose, a grain of calomel, followed some hours after, by a teaspoonful of castor oil, generally answers very well. If difficulty occurs in procuring free evacuations, laxative enemata should be resorted to in conjunction with the use of internal purgatives. After the bowels have in the first place been well evacuated, they should be kept in a loose state, by small doses of calomel in combination with rhubarb, or with ipecacuanna. A mixture of calomel, ipecacuanna, and bi-carbonate of soda forms a most excellent aperient in this disease. A powder consisting of a fourth of a grain of calomel, the same quantity of ipecacuanna and one grain of the bicarbonate of soda, rubbed up with a few grains of white sugar, should be given every three or four hours, or at longer intervals, so as to procure three or four alvine discharges in the course of about twenty-four hours. The ipecacuanna promotes the laxative operation of the calomel, and tends to keep up the action of the cutaneous exhalents, whilst the soda counteracts the formation of acid in the primæ viæ. Mr. Lawrence, recommends the use of a mixture of James's powder and calomel, and there can be no doubt of its being very well adapted for this purpose. One sixth of a grain of the former with a fourth of a grain of the latter may be given three or four times daily. Calomel can seldom be omitted with propriety in the treatment of the early stage of infantile erysipelas. The liver is, probably, always more or less disordered in this disease; and calomel is doubtless often beneficial, by its operation on the biliary organs, independent of its aperient effects on the bowels. The stools, generally, present a grass-green appearance; and I have seen an instance in which they were black and viscid, like meconial matter, for several days. It is necessary, however, to proceed with caution in the use of calomel at this early period of infancy. When given very freely, it is apt, at this tender age, to give rise to dangerous irritation of the stomach and intestinal canal. Throughout the whole course of infantile erysipelas our principal aim should be to restore the regular action of the liver, alimentary canal and of the skin. Should the small doses of calomel and ipecacuanna fail to keep up the requisite action of the bowels, an occasional dose of castor oil, or of magnesia, should be used; and to promote the regular action of the cutaneous exhalents, warm or tepid bathing may be resorted to with a prospect of advantage. In the erysipelas of adults, attended with symptoms of biliary derangement, Desault, strongly recommends the use of *emetics*, and from a case which came under my notice, about eight years ago, in an infant nearly four weeks old, I am inclined to think, that the occasional use of *emetic* doses of ipecacuanna, would often prove serviceable in the early stage of infantile erysipelas. In the child referred to, pretty active vomiting was unintentionally excited by a dose of calomel and ipecacuanna on the third day of the disease; and the erysipelatous affection almost immediately assumed a more favorable appearance. When the skin is very dry and warm, some benefit may be derived from the use of mild diaphoretics. From fifteen to thirty drops of the following mixture* will usually answer very well for this purpose.

Where the tendency to visication and gangrene, is obvious, or where the attending fever is of a low and typhoid character, tonics must be employed at the same time that the bowels are kept in a loose state by the aperients already mentioned. The necessity of resorting to the use of tonics, is especially urgent, when the inflammation is about terminating, or has already terminated in suppuration or gangrene. Experience has shown that the *sulphate of quinine* is decidedly the most valuable tonic we possess in cases of this kind. To an infant within the first month the sixth of a grain of this article, may be given every two or three hours. It may be advantageously united with a suitable portion of the extract of hyoscyamus—a combination which I have found peculiarly beneficial in the typhoid erysipelas of adults. The tenth of a grain of this extract may be given to an infant, two or three times daily. Should diarrhœa occur after suppuration has taken place, it must be immediately checked. For this purpose minute doses of Dover's powder, in union with prepared chalk, is probably the most suitable remedy. The fourth of a grain of Dover's powder, with two or three grains of chalk, mixed with mucilage of gum arabic, should be given every three or four hours until the bowels are quiescent. One or two drops of laudanum, also, given at proper intervals, will often suffice for this purpose. To support the system, where there is a tendency to prostration, some writers speak very favorably of the employment of the carbonate of ammonia. I have used it in conjunction with quinine, with manifest advantage in a case of infantile erysipelas. Ammonia may in general be given earlier, without risk of increasing the inflammation, in cases attended with considerable fever, than quinine. When the circumstances are such as to render it doubtful whether stimuli and tonics should be employed or not, the carbonate of ammonia ought to be selected, if it be concluded to resort to such remedies. The diaphoretic tendency of this article, renders it more eligible in diseases of a typhoid character, attended with local inflammation, than, perhaps, any other article of the kind we possess—more especially where the propriety of such remedies may be doubtful. One of my medical friends has informed that, he had in two instances of infantile erysipelas derived unquestionable benefit from the internal use of *spirits of turpentine.* He gave three drops of it, every four hours, to an infant about six weeks old. In the erysipelas of adults I have in several instances, prescribed the turpentine, and, as it appeared to me, with a very good effect.

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* ℞. Spirit Mindereri ℥i. Vin. Antimonii, gtt. xxv. Syrup Lemonis ℥ii. M. ft.

Various opinions have been expressed with regard to the propriety or usefulness of attempting to subdue or restrain the erysipelatous inflammation by local applications. Bateman asserts, that external applications, "are in general unnecessary if not prejudicial," in the early stages of the disease; and the same remark is made by some other writers of respectability. The weight of good testimony, however, is decidedly in favor of external applications to the affected part; and my own experience has convinced me, that very important advantages may often be obtained from a judicious management of this class of remedies. Cooling applications, such as cold water—lead-water and other soothing means, were formerly much resorted to in the treatment of erysipelas. Experience however, has not sustained the character of such applications as in general suitable remedies in this variety of inflammation. There evidently exists a close analogy between erysipelatous inflammation, and the inflammation caused by a scald or burn. In both, the inflamed capillaries appear to be in a debilitated and passively distended condition, requiring applications of an exciting character. In the erysipelas of adults, *blisters* often produce highly beneficial effects, and by proper management they may doubtless be used with equal advantage in the erysipelas of infants. Dr. Dewees, seems to place considerable reliance on them in the treatment of this affection. I have not resorted to blistering in more than one case, and in this instance it had a very good effect. The blister should be large enough to extend beyond the inflamed part, so as to vesicate a portion of the surrounding sound skin. After the plaster is removed, the blisters should be opened, and the vesicated surface dressed in the usual way, or what I should prefer, with weak mercurial ointment. When the erysipelas is seated on one of the extremities, a blister round the limb, on the sound skin, will frequently arrest its progress in that direction. Blistering is most apt to prove useful, when the febrile excitement is moderate, the tongue moist, and the skin somewhat hot and tense.

Of late years, the mercurial ointment has been a good deal employed in erysipelatous inflammation; and Dr. Dewees speaks favorably of its use in the present variety of the disease. In one instance under my care, its effects were obviously beneficial; but in the last case I witnessed, it did no good whatever. It should be applied, by spreading it on pieces of linen, and laying them over the whole of the inflamed part. Dr. Dewees directs, it should be applied only to the inflamed margin, and a portion of the surrounding sound skin, after the vesicles have opened, and the part has become covered with a crust of concrete serum. A weak solution of corrosive sublimate, also, has been frequently employed in this country, as a local application in erysipelas, and I have, in some instances, known it to produce very excellent effects. Three grains of the sublimate to an ounce of water, forms a solution of proper strength for this purpose. Pieces of linen moistened with it, should be laid over the inflamed part, and renewed from time to time, as they become dry, until the inflammation assumes a pale color. The external use of the nitrate of silver, also, will occasionally procure decided benefit in this disease. I have more frequently succeeded in subduing erysipelatous inflammation with this application, than with any other remedy I have employed. The solution, in the proportion of five or six grains to an ounce of water, should be applied over the whole inflamed surface, by strips of linen, in the way just mentioned. In employing this remedy, the persons about the patient hould be informed, that it will give a black color to the skin; for without such premonition, the discoloration of the skin will be apt to be mistaken for mortification, and excite great apprehension and anxiety of mind.

A lotion composed of sugar of lead and sub-carbonate of ammonia—one drachm of each, and a pint of water, is highly recommended by Dr. Peart, as a local application in this disease.—Some of the English surgeons speak very favorably of an ointment formed of equal parts of ceratum calaminæ, ceratum saponis, and unguentum plumbi acetatis.

The practice of making free incisions through the inflamed skin, and subjacent cellular and adipose structures, has recently been greatly extolled as a means for arresting the progress of phlegmonous erysipelas. Mr. Lawrence declares, that "these incisions are followed, very quickly, and sometimes almost instantaneously, by relief, and a cessation of the pain and tension; and a corresponding subsidence of the inflammation almost always ensues. In twenty-four hours, the redness has usually disappeared, and the skin itself is found wrinkled from the diminution of the general inflammatory tension. The immediate relief, although very desirable to the patient, is, however, of less consequence than the decided influence of the practice in preventing the further progress of the disorder; and this important result has never failed to occur within my experience, when the case has been a proper one for the practice, and the state of the patient has admitted of its being fairly tried." The incisions ought to be made in the early stages of the complaint, with a view rather of preventing the ultimate consequences of the inflammation, by giving exit to the blood and extravasated serum, than of evacuating the puss and sloughed cellular membrane. "It is when the action is beginning, has commenced, or is at its acme; when the heat is burning, the thirst ardent, the tension great, the pulse active, the pain acute, and the texture engorged with blood, that incisions are most apt to prove beneficial." Mr. Lawrence recommends one long incision, extending from one boundary to the other of the inflamed part. Mr. Hutchinson, on the contrary, thinks it better to make a number of smaller incisions—about an inch or an inch and a half in length, through the skin and subjacent cellular structure. Mr. Lawrence and others have restricted this practice to phlegmonous erysipelas; but it appears from the experience of Dr. Dill, that it may be extended with advantage to other modifications of this disease.

I am not aware that this practice has ever been tried in the erysipelas of infants. It is not improbable, that it might be resorted to in many cases of this kind, with much advantage. Infantile erysipelas often presents a well-marked phlegmonous character; and in such cases, if the situation of the inflammation were favorable, I should be much disposed to try the effects of the practice.

When suppuration has taken place, an opening should be made into the most depending part of the cavity, so as to give free exit to the purulent fluid and sloughed cellular structure. If the matter is suffered to remain confined, it will make its way between the muscles and tendons, destroying the cellular tissue as it proceeds, until the patient sinks under the general irritation and exhaustion which it produces. When a portion of the inflamed part becomes gangrenous, and offensive ulcers occur, the charcoal poultice is perhaps the best application. A poultice made of crumbs of bread, and a strong decoction of oak-bark, with a small portion of yest, forms a valuable application, where the ulcers assume a phagedenic character.

[Touching the local application of the solution of nitrate of silver, it is proper to say, that the original design of Mr. Higginbotham, in the use of the remedy, has been overlooked. He employed a very strong solution, and expected to set up a new action thereby. Instead of five grains to the ounce of water, he urges the use of from thirty to sixty grains.

The tincture of iodine is also an excellent local application, and, in patients of a scrofulous habit, decidedly preferable to the lunar caustic. An ounce of alcohol of the strongest kind will dissolve forty grains of iodine, and this is the best solution for the purpose. One or two applications often suffice.

Dr. Fahnestock has proposed the use of creosote over the entire inflamed spot. It is supposed to act very much as the nitrate of silver; by subduing the peculiar morbid action, and setting up a state of the skin, more consonant with the healthy condition of the surface.

Let it never be forgotten, however, that local applications cannot avail, in the absence of well-devised efforts to correct the general health, and especially of means for improving the condition of the stomach and bowels. It has happened, frequently, that erysipelas has vanished under the operation of constitutional means alone.]

CHAPTER XIII.

INDURATION OF THE CELLULAR MEMBRANE AND SKIN. SKINBOUND.

In private practice, this remarkable and very dangerous malady is but seldom met with; but in lying-in and foundling hospitals, it is of very frequent occurrence. In the *Hospice des Enfans Trouvés*, at Paris, 645 cases took place from 1808 to 1811;* and in 1826, there were 240 instances of it in the same institution.† On an average, one out of every twenty-five infants admitted into this hospital, become affected with this disease; and of those who are affected, not above twelve out of a hundred usually recover. In a vast majority of instances, the disease comes on within the first nine or ten days after birth. Mr. Billard states, that "nearly all the cases that occurred in 1826, in the abovenamed institution, were in children of from one to eight days old, and some were affected from birth." Cases, nevertheless, sometimes occur at a much more advanced period of infancy. Mr. Andrews has recorded a remarkable instance, which occurred in a child eighteen months old; and I have seen a case in a child between the sixth and seventh month of age.

In some respects, the disease is evidently closely allied to infantile erysipelas; and in others, it often manifests an obvious affinity to the convulsive affections. It usually commences on the lower parts of the body, particularly about the pubic region, and on the inner aspect of the thighs, and gradually spreads, becoming more or less conspicuous in different parts, until, in violent cases, the whole surface of the body becomes affected. The affected part is firm and incompressible to the touch, resembling the hardness and tension which occurs in *phlegmasia dolens.* The skin adheres so firmly to the indurated cellular tissue, that it cannot be pinched up or moved even where it is usually most loose. In some instances, it presents a yellowish or wax-like appearance, and in others, it is of a pale red or purple color. Those parts that are reddish or purple, are generally considerably swollen; yet the swelling does not pit, although firmly pressed on with the finger. When the skin has a pale yellowish appearance, the tumefaction is, in general, very slight; but the firmness and tenseness of the part is even greater than where there is lividness. The affected parts of the skin, whether pale or purple, are remarkably cold to the touch, and the surface generally is dry and harsh. The countenance is pale and contracted, and the little patient almost constantly "makes a peculiar kind of moaning noise," and appears to be unable to make a full inspiration and to cry out, from the restrained action of the thorax. Deglutition is generally very difficult, and sometimes wholly impossible. In some cases, tetanic spasms supervene, in the latter stage of the disease; the jaws become locked, and the head and trunk are sometimes rigidly bent backwards. The pulse is usually small, irregular and rapid; and the bowels are almost always disordered—the discharges being sometimes of a bright green, and others of a whitish or clay colored appearance. The urine is generally freely secreted, although, in some instances, the reverse takes place.

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* Casper. Characteristick der Franzœsischen Medicine, p. 505. † Billard, Archives Generales de Medicine, Fev. 1827.

Mr. Billard asserts, that there are two distinct varieties of this disease. He considers one variety as depending wholly on the infiltration of coagulable serum into the cellular structure. Cases of this kind are characterized by considerable tumefaction of the affected parts, with a deep red or purplish color of the skin. The other variety, attended with a wax-like appearance of the skin, and but very little swelling, depends upon a hardening of the subcutaneous adipose substance without, and with but little serous infiltration into the cellular structure. The parts where the adipose hardening, and consequent tightness of the skin, are usually most conspicuous, are the cheeks, the thighs, the calves of the legs, and the back. On dissection, in cases of this kind, the adipose substance is found as firm and condensed as suet, and the skin contracted and firmly adherent to it.

The variety of the disease which arises from serous infiltration, is, according to Mr. Billard's observations, "nothing else than true œdema, altogether of the same nature with that which occurs in adults, affected with disease of the heart, or great blood-vessels." The hardness of the skin, he thinks, "is entirely owing to its being much less loose in early infancy than at a maturer age, and consequently yielding less readily to the pressure of the extravasated fluid." In making incisions into the indurated part, an abundance of serous fluid flows from the cellular structure; and Mr. Billard affirms, that when this is done at an early stage of the disease, the skin soon loses all its hardness.

Very little of a satisfactory character has been brought to light with regard to the exciting or remote cause of this formidable complaint. It has been ascribed to the influence of cold, soon after birth; but its endemic occurrence in certain hospitals, does not favor this opinion. It is evident from this fact, that foul or deteriorated air must have a considerable agency in the production of the disease. In private practice, it is most commonly met with among the poor, who live in crowded and filthy habitations. Children who are nourished with artificial food, appear to be much more liable to the disease, than those who are nourished at the breast. In the Foundling Hospital in Paris, there are always a number of fresh nurses; and it has been observed, that whenever there is a deficiency of wet nurses in the institution, and the children are chiefly or entirely confined to artificial nourishment, the disease is most common. These facts, in connection with the circumstance, that the bowels are often much disordered, before the occurrence of the external affection, would seem to indicate that intestinal irritation, in co-operation with that depraved and irritable state of the system, which is apt to arise from breathing a contaminated air, constitutes a principal source of this malady. The causes of this disease differ, probably, very little from those which give rise to infantile erysipelas. This affection is often attended with a condition of the skin very analogous to erysipelas; and we frequently find erysipelatous inflammation associated with considerable induration of the subcutaneous cellular tissue, for some distance beyond the inflamed margin. It occurs sometimes in the progress of other diseases—particularly in protracted affections of the bowels, accompanied with biliary disorder. The case related by Mr. Andrew was preceded by a feverish and restless state, accompanied with diarrhœa. The last case but one which I witnessed, was preceded for upwards of two weeks with loose and griping stools, a general irritated state of the system, and an obstinately dry skin. Hardening of the cellular structure and skin is frequently accompanied by a jaundiced appearance of the surface. M. Billard states, that in the Parisian foundling institutions, "the most common accompanying disease, is jaundice."

On post mortem examination, the cellular tissue is generally found thickened, condensed, engorged with serum, and often of a dense, reddish, and granular appearance, "not unlike a portion of hepatized lung." In many cases, the adipose substance is peculiarly consolidated, with more or less infiltration into the cellular membrane. The lymphatic glands are frequently found indurated and enlarged, more especially those of the mesentery. Out of ninety cases examined by Mr. Billard, there were twenty that presented a decidedly morbid condition of the liver; and fifty, in which there was inflammation of the alimentary canal. In all the cases, there was "a very remarkable general congestion. The venous blood especially predominated in the different tissues." Mr. B. thinks that this congestion does not depend on mechanical obstruction in any point of the circulation, but is due to "a general superabundance of blood in the system, or a kind of congenital plethora." From the remarkable and unconquerable dryness of the skin, there is evidently "some derangement of the capillary circulation;" and this morbid inactivity of the cutaneous exhalents, in conjunction with a general plethoric and irritative condition of the system, constitutes, perhaps, the immediate cause of cellular infiltration and tension of the skin.

Treatment.—Although an extremely dangerous affection, this singular malady is not so entirely beyond the control of remedial treatment as was formerly supposed. Out of 645 cases which occurred in the Hospice des Enfans trouvés, from 1808 to 1811, there were 78 cured; and the proportion of recoveries has of late years been considerably greater. Mr. Billard thinks that the opinion respecting its fatality, has arisen, in a great degree, from the circumstance of its being very frequently associated with other diseases of a dangerous character.

The *aqueous vapor bath* is decidedly the most valuable remedy that has hitherto been recommended for the cure of this affection. As soon as the disease makes its appearance, the infant ought to be subjected to the vapor bath; and this should be repeated every three or four hours, until the skin becomes moist and soft, and the tightness and hardness has disappeared. The heat of the vapor should not exceed 105°; the most comfortable and salutary temperature being from 98 to 100°. When the child is taken out of the bath, it should be wrapped up in warm and dry flannel, and laid in its bed. The simple application of warm flannel immediately to the skin, and frequently renewed, will sometimes bring on a gentle perspiration, and reduce the local œdema.* If no suitable apparatus for applying the vapor be at hand, the infant should be laid in its bed, and hot bricks wrapped up in wet pieces of flannel, placed a short distance from its body under the covers, supported by hoops or some other contrivance, so as to leave a free space for the accumulation of the vapor. Richter speaks very favorably of the effects of blisters in this complaint. When early applied to the affected parts, they may remove the sanguineous engorgement of the sub-cutaneous structures, and arrest the progress of the induration. The only instance of recovery which has occurred in my practice, was effected by the vapor bath, and blistering. The induration commenced on the anterior surface of the left thigh and groin. An epispastic was applied over the whole surface of the affected part, and suffered to lie about three hours, when it was substituted by a large emolient poultice. The tumor and hardness of the part were obviously diminished by the blistering, and they did not extend beyond the limits which they occupied when the blister was applied. As the liver and bowels are generally more or less disordered, minute doses of calomel, in union with ipecacuanna, as recommended in infantile erysipelas, may be employed with occasional advantage.—Some writers, indeed, look upon calomel as a remedy of indispensable importance; and there can be no doubt, that when the disease is attended with prominent disorder of the liver, its influence will often be highly salutary. In those cases that are accompanied by a jaundiced appearance of the skin, mercurials are especially indicated, and can never with propriety be wholly neglected. It appears to me not improbable, that free incisions through the skin and subjacent cellular tissue would prove beneficial. The engorgement of the subcutaneous capillary vessels ought, perhaps, be removed in this way, and exit given to a portion of the infiltrated serum—effects which could hardly fail doing good, in certain cases of this complaint. The tepid or warm bath, which has been much recommended by some German writers, appears to be much less beneficial than dry warmth, or the vapor bath; and it is even asserted, that warm bathing has frequently proved injurious.

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* In the foundling hospital at Florence, this disease is treated by the application of external heat, made by keeping the infant wrapped up in warm flannel, in conjunction with stimulating frictions.

[We cannot doubt, that this infantile malady is often an affair of scrofulous origin; and if so, the absolute need of some mild iodine treatment internally, and a vigorous use of iodine externally, will be necessary. After due preparation of the alimentary canal, a solution of the hydriodate of potash, consisting of a scruple to four ounces of water, should be in readiness. A teaspoonful of this, added to sweetened water, may be given thrice a day; and to a blistered surface, nearly healed, an ointment, made by rubbing half a drachm of iodine with an ounce of simple cerate, might be beneficially applied.

In other cases, we are of opinion that the repeated exhibition of emetics, and the frequent use of the vapour bath, promise more than any other treatment. There can be no doubt, that the early and constant employment of the most healthful diet, aided by rigid cleanliness, will be more efficacious to prevent the disease, than any sort of medicinal management.]

CHAPTER XIV.

OF THE CORYZA OF INFANTS.

This disease was first described by Underwood, under the name of *coryza maligna*—an affection, which, he says, "is not only far more severe, but of a very different character," from the complaint which passes under the name of the "snuffles." Dr. Denman, who, afterwards, published a more ample and circumstantial account of this malady, speaks of it as "a new and very peculiar affection." It appears to occur but very seldom; and it is doubtful whether it has ever been observed in this country. I have met with one case, which appeared, in many respects, to accord with the descriptions given of this complaint by Underwood and Denman; but it was, probably, nothing more than an aggravated case of the common coryza from cold. It was at first supposed, that it never occurred in infants over a month old; but Underwood states, that he has seen instances of it at a much more advanced age.

The disease is characterised by a purulent discharge from the nose, acquiring in some instances, a sanious character, attended with complete stoppage of the nostrils, and great difficulty of breathing, especially during sleep. The infant appears pale and languid, and a singular purple streak encircles the margin of the eyelids, which Mr. Denman was disposed to regard as pathognomic. There is usually "a general fulness about the throat and neck externally," which comes on soon after the purulent discharge from the nose commences. After these symptoms have continued for some days, the tonsils and fauces present a tumified and dark-red appearance, "with ash-colored specks upon them,' terminating, in some cases, in extensive ulcerations. As the disease advances, the infant declines rapidly in strength; and the breathing, often, becomes so difficult, that an attendant "is re quired to watch the little patient, in order to open its mouth as often as it may be requisite to prevent suffocation." The disease usually continues two or three weeks, and when it does not terminate in death, is very apt to leave a state of chronic indisposition, attended with much disorder of the alimentary canal.

This appears to be a very dangerous affection. Denman states that of eight cases which he witnessed in the course of about a year, two, only, recovered. Dr. Underwood, however, observes that the cause of its frequent fatality, when it was first noticed, arose, rather from the true nature of the disease having been imperfectly understood, than from any positive difficulty in controlling its progress by remedial management. The disease appears to consist in a peculiar inflammatory affection of the mucous membrane of the nasal cavities, extending backwards to the fauces and, in some instances, descending into the stomach and bowels, giving rise to painful and exhausting diarrhœa. The alvine evacuations are frequently of a peculiar bluish or green color, particularly after the employment of repeated purges. Mr. Hunter and Mr. Home examined the body of an infant that had died of this malady; but the only morbid appearance they discovered was a dark-red and highly injected state of the lining membrane of the nose.

Treatment.—According to the experience of Dr. Denman, the employment of laxatives so as to keep the bowels freely open, and remove from them the acrid matter which descends into the stomach from the nose, constitutes "the grand means of cure." If this be not constantly attended to, painful and rapidly wasting diarrhœa almost invariably arises from the irritating fluid that is continually passing into the stomach. The free use of mucilaginous drinks, also, will be beneficial in this respect. Harsh purgatives, however, are highly improper, as they could scarcely fail to produce almost as much irritation as the irritating cause which they are intended to remove. "One or more teaspoonfuls of castor oil should be given, every day, so as to procure three or four motions daily. It is remarkable, that even weak infants endure purging better under this complaint than under any other, unless it be the fever caused by painful dentition" (Underwood).

The employment of mild clysters also will be proper,—more especially, when the lower part of the rectum becomes considerably irritated. Dr. Denman states, that he often derived much benefit from small doses of opium, or the syrup of white poppies. There can be no doubt of the great propriety of using narcotics in this affection, for it is evidently attended with an irritative state of the general system, without a very active inflammatory condition, or a tendency to high febrile excitement. Dover's powders, given in small doses, would, probably, have a very beneficial effect, by allaying the morbid irritability and disposing to general diaphoresis. When the disease continues for several weeks, and "the infant becomes pallid and very feeble, a recourse to the decoction of oak bark has at once removed the snuffling, and given vigor to the infant in the course of a few days." The sulphate of quinine would, doubtless, be a useful remedy in cases attended with much debility and exhaustion. The disease sometimes assumes a chronic character, and continues four or five weeks, and occasionally for several months. Such cases are apt to be attended with occasional attacks of spasmodic respiration, "as if the infant were dying." This symptom, "as well as the snuffling often recurs some time after the child seemed to be cured:" and even the purulent discharge from the nose, may recur from time to time, after the disease appears to have been wholly subdued. In cases of this kind, Underwood, besides purging, recommends fomenting applications to the bridge of the nose; and "afterwards to apply some aromatic liniment." The application of a few leeches to the root of the nose would, perhaps, be beneficial in the early as well as in this advanced stage of the disease. There appears to be some risk in using vesicatories in this affection; for Underwood observes, that "the parts on which blisters had been laid in the beginning, and which had been apparently healed, often sphacelated towards the conclusion."

[An American physician, whose name is not now recollected, has proposed to paint the nares and fauces with a solution of nitrate of silver. The same practice was previously suggested by a French practitioner, who affirms that a single application will arrest the disease. It will be necesssry, at the same time, to attend to the correction of the primæ viæ.]

CHAPTER XV.

OF THE APHTHÆ OF INFANTS. THRUSH.

This is one of the most common diseases of infancy. It is characterised by a peculiar eruption of minute pustules, giving rise to a whitish incrustation of the tongue, and lining membrane of the mouth and fauces. The aphthæ sometimes make their appearance without any previous symptoms of general indisposition, or disorder of the alimentary canal. Much more frequently, however, symptoms of disorder of the stomach and bowels, associated with manifest languor and drowsiness, precede the occurrence of the aphthous affection. The aphthæ usually appear, first, on the inner surface of the angle of the lips, and about the tip of the tongue, in the form of white specks, resembling small flakes of coagulated milk. From these parts, the eruption spreads, more or less rapidly, until, in some instances, a continuous aphthous crust is formed, over the whole surface of the tongue, mouth and fauces. In many cases, however, the eruption is much less extensively diffused, the aphthæ occurring only on the tongue, and central parts of the cheeks; and we occasionally find them scattered in small patches with intervening spaces, over the lining membrane of the mouth and surface of the tongue. In these mild cases the infant seldom experiences any particular uneasiness or disturbance from the local aphthous affection; but when the eruption is extensive, it rarely fails to give rise to more or less suffering and disorder in the system. In cases of this kind, there is, generally, much thirst, restlessness, languor, acid and flatulent eructations, loose, green, and griping stools, drowsiness, pain, and difficulty of sucking, and a copious flow of saliva and mucus from the mouth. The skin is usually dry and harsh; and, in the severer instances of the disease a slight degree of febrile irritation often occurs. The stomach and bowels are almost always prominently disordered in such cases. The infant is apt to vomit after taking any thing into its stomach, and the milk is generally thrown up, in the form of firm coagula. Profuse watery diarrhœa frequently ensues, and the little patient is greatly harassed by sour and offensive eructations, griping and colic pains, and tenesmus from the extremely sensible and excoriated condition of the margin of the anus. Under these symptoms emaciation and loss of strength go on rapidly; the child's countenance becomes pale, sunken, and expressive of much suffering and uneasiness. The difficulty of swallowing increases, and at last sometimes becomes altogether impossible. The abdomen is always sore to the touch, in cases of this violent character, and frequently much distended and tympanitic. If the disease is not arrested, the infant, at length, dies in convulsions, or in a state of stupor and insensibility, resembling the last stage of hydrocephalus, or from exhaustion.

In mild forms of the disease, the aphthous eruption continues of a white or yellowish color throughout; but in severe cases it soon acquires a dark brownish color, and instead of being soft and humid, as in the ordinary instances, it often becomes dry and harsh, as the disease advances. It is generally believed, that the aphthæ frequently extend from the mouth, throughout the whole tract of the alimentary canal. Dr. Dewees is disposed to doubt whether such an extension of the eruption does ever occur. He is inclined to believe that it never passes lower down than to the cardiac extremity of the œsophagus. In examining the body of an infant that had died from aphthæ, he found "the whole tract of the œsophagus literally blocked up with an aphthous incrustation to the valve of the cardia, where it suddenly stopped. Not a trace of aphthæ was discovered below this place." I have myself had an opportunity of examining the body of an infant, that had died of this disease. In this case, the aphthæ were very distinct throughout the whole course of the œsophagus. The stomach and bowels presented nothing that bore any resemblance to this eruption; but there were decided marks of inflammation in the mucous membrane of the small intestines, with a vast number of minute superficial ulcerations, and larger patches of softening of this tissue, throughout the colon, and lower part of the rectum. The mucous membrane of the alimentary canal, doubtless, always becomes more or less diseased in the severer forms of this malady. It is probable, however, that the minute pustules, which give rise to the aphthous incrustation on the more dense mucous membrane of the mouth and œsophagus, terminate speedily in superficial abrasion, or ulceration, in the delicate mucous tissue of the stomach and bowels. In the case which I examined, these minute ulcerative points were very obvious in several portions of the large intestines. The excoriation of the anus, which is generally regarded as an evidence that the aphthous affection has passed throughout the whole extent of the alimentary canal, arises, perhaps, solely from the irritation produced by the acrid discharges from the bowels. Tenderness and excoriation of the anus is by no means an uncommon consequence of acrid diarrhœal discharges.

The duration of this affection is very various. In slight cases, the aphthæ disappear in a few days, without any unpleasant consequences. In some instances, the aphthous eruption continues for several weeks, without becoming very severe, or causing any material deviations from health. Sometimes, the aphthous crust falls off, and is soon succeeded by another one; and these separations and renewals of the eruption, may occur three or four times, in the course of the malady. "The oftener the crust is renewed, the worse it becomes, for each new eruption is usually thicker and less white, than the preceding one." When the crust falls off, it exposes a smooth, red and slightly excoriated surface. The cavity of the mouth is always unnaturally hot, and the affected parts are, in general, very sensible and painful when pressed on or touched.

Infantile aphthæ very rarely occurs a second time in the same infant—at least as an idiopathic affection. It may, indeed, recur frequently, at every stage of life, as a symptomatic effect of other diseases—particularly in the advanced stages of protracted maladies attended with irritation of the alimentary canal. But it is extremely doubtful, whether these secondary or symptomatic affections are identical in their character, with the usual aphthœ of infancy.

Some writers affirm that the disease is very rarely, if ever, attended with fever; whilst others declare that the occurrence of febrile irritation in this complaint, is very common. Hecker divides the aphthæ of infants into three varieties. His second variety, which he affirms is very common in Germany, is always attended with decided febrile symptoms; and he thinks that the disease is closely allied in its nature, to the exanthematous fevers. It commences with manifestations of lassitude, restlessness, drowsiness, and much thirst. The child seizes the nipple eagerly, but immediately leaves it again, and cries, as if the effort of sucking gave it much pain. The cavity of the mouth is hot, dry, red, and very sensible. The child is apt to vomit; frequent watery, green, and painful alvine discharges occur, and the urine becomes scanty, the pulse is accelerated, and the skin preternaturally warm and dry: the voice becomes rough and slightly hoarse; and finally after these symptoms have run on for three or four days, the aphthous eruption makes its appearance. Dr. Hecker asserts, that when the disease occurs epidemically, it almost always assumes this febrile character, assuming, in some degree, the regular progress of an exanthematous fever. According to my own observations, the ordinary simple cases of the disease are invariably without the slightest manifestations of fever. When the eruption is extensive, however, and there is much disorder of the alimentary canal, slight febrile symptoms are certainly often developed. I am at present attending an infant severely affected with this complaint. The aphthous crust extends over the whole surface of the tongue, mouth, and fauces, and from the manifest pain on swallowing, probably passes down to a considerable distance into the œsophagus. This child is in a decidedly febrile condition; although before the aphthous eruption appeared, its general health seemed to be good. The febrile symptoms that occasionally attend the ordinary forms of the disease, depend, probably, chiefly on the inflammatory irritation which is apt to occur in the alimentary canal, and are wholly accidental.

In hospitals, this disease sometimes assumes a highly dangerous character. In the French foundling institutions, it is said to carry off a great many infants. In these malignant cases, the aphthous crust soon becomes thick and of a dark brown color. When it falls off, it leaves a number of yellowish-brown ulcers, of a corroding character. The diarrhœal discharges are green, and extremely acrid, and the vital powers sink very rapidly. Is the aphthæ or thrush of infants a symptomatic or an idiopathic affection? The general opinion appears to be, that it is altogether symptomatic—occurring as an accidental consequence of gastro-intestinal disorder. Dr. Dewees, expresses himself in a very ambiguous, or rather contradictory manner, on this point. In the beginning of his chapter on this disease, he says, "that this affection is one of a symptomatic kind—rarely, perhaps never, idiopathic;" yet in a subsequent paragraph, he observes, "the opinion so commonly credited, of its being a symptomatic affection, is very questionable;" and then goes on to give a number of "facts," which he says have "lately" led him "to question the sympathetic origin of aphthæ." Nevertheless, the very next paragraph commences in these words: "This *symptomatic* affection is not confined to early infancy." The fact is, the arguments which led the Doctor to doubt the correctness of his opinion, that the disease is purely symptomatic, would have convinced him of its entire erroneousness, if he had not viewed them through the medium of a contrary sentiment long and thoroughly entertained. It takes a powerful battery of "facts" to knock down an opinion that has become firm by age. For my own part, I am well satisfied that the disease, as it occurs in early infancy, is of a peculiar and strictly idiopathic character; although an aphthous affection of the mouth may, and often does, occur at every stage of life, as a symptomatic or secondary phenomenon of other forms of disease, or morbid conditions of the digestive organs. We see this often, in the last stage of phthisis pulmonalis, and in nearly all protracted diseases of a febrile and exhausting character, as they approach a fatal termination. It is, also, frequently observed in children, as an attendant on other maladies; particularly such as are attended with disorder and inflammatory irritation of the alimentary canal.

If the aphthæ of infants were a purely sympathetic affection, depending on disorder or irritation of the alimentary canal, it could of course never take place without the previous occurrence of gastro-intestinal disorder. Cases, however, do occur, in which no obvious signs of derangement of the digestive or intestinal functions can be noticed. Dr. Dewees states that he has seen two instances, in which the alimentary canal "was in the most perfect order; and I have, certainly, witnessed several cases which were entirely free from any manifestations of disorder of the stomach and bowels. It may be presumed, too, that were the disease symptomatic in its origin, derangement of the alimentary canal would be much more frequently associated with aphthæ, than it is known to be. At every period of life, from early infancy to advanced age, disorder and irritation of the stomach and bowels occur very frequently, and pass through every grade of violence, without giving rise to aphthæ. Mere disorder or irritation of the alimentary canal, is very rarely productive of aphthous eruptions in the mouth, unless it be connected with a chronic form of febrile irritation, and general exhaustion. In infantile aphthæ, however, the child often appears to enjoy good health, up to the time when the aphthæ make their appearance; and in mild instances, there is frequently no material indisposition during the continuance of the aphthous eruption. This, I believe, never occurs in the aphthous affections which take place at a more advanced age. These cases are always, unequivocally, connected with serious general maladies, and seldom occur, until the diseases of which they are symptomatic phenomena, have acquired a highly dangerous, if not a necessarily fatal degree of violence. The circumstance, however, which seems most clearly to shew that infantile aphthæ is a peculiar idiopathic affection, is the fact, that infants who have passed through the disease, very seldom become affected with it a second time, although the stomach and bowels may become repeatedly disordered, and remain so, during the subsequent period of infancy and childhood. We often see infants affected with aphthæ, previous to the third month, with very little disturbance in the alimentary canal; yet they will not become affected with it again, although they may afterwards be repeatedly and long harassed by disorder of the stomach and bowels. The circumstance, too, that this affection is almost wholly confined to the age of infancy, would appear to indicate that there is an essential peculiarity in its character and mode of origin. If it were an accidental sympathetic phenomena of gastro-intestinal irritation, without any specific peculiarity in its nature, we should expect to meet with it at every period of life, instead of seeing its occurrence almost entirely restricted to a particular stage of childhood. The occasional appearance of this infantile malady in an epidemic manner, is also manifestly opposed to the idea of its being a purely symptomatic affection. In some foundling hospitals in Europe, it has frequently prevailed endemically for a season; an occurrence which could not, with the slightest plausibility, be ascribed to any disorder of a symptomatic character. In mild cases, the aphthous affection may often be speedily removed, by local applications to the mouth, alone; and occasionally, even severe instances will yield to remedies of this kind, without the employment of any thing for improving the general health, or correcting the morbid condition of the alimentary canal (Dewees.) From a view of the foregoing considerations, the idiopathic character of infantile aphthæ can, I think, hardly be doubted. It is very manifest, however, that disorder of the stomach and bowels, contributes very materially to the production of this disease, either by creating a predisposition to it, or by exciting the latent tendency in the infantile system to its occurrence.

Feeble and sickly children scarcely ever escape this disease; and they are much more apt to become severely affected with it than those who are of a robust and healthy habit of body. Whatever is capable of disordering the stomach and bowels, may be regarded as an exciting cause of the disease. Unwholesome and indigestible nourishment, and over-distention of the stomach, during the early stage of infancy, almost inevitably lead to the occurrence of aphthæ. Bad and old milk, and thick farinacious preparations sweetened with brown sugar or molasses, are especially apt to give rise to the disease. Inattention to keeping the infant's mouth clean by occasionally washing out the sordes with a soft piece of linen and fresh water, and particularly the nauseous practice of permitting the child to suck portions of food tied up in a piece of cloth in the form of a nipple, contributes greatly to the production of the aphthous eruption. Breathing an impure and deteriorated air, also, appears to have a decided tendency to favor the occurrence of this malady. Children who are kept in crowded and ill-ventilated apartments, or who are suffered to sleep much under the bed-clothes, are especially liable to become affected with it. The occasional great prevalency and fatality of the disease in foundling institutions, doubtless arises, in part, from this cause. When improper nourishment co-operates with foul air, the disease is apt to acquire a highly dangerous character. It has been supposed that the apthæ of infants is often propagated by a specific contagious virus. Dr. Good is of this opinion, and refers, as some of the German writers do, to the excoriations, which frequently occur on the nurse's nipples, when the nursling is affected with aphthæ. There is evidently a very acrid and irritating fluid discharged from the minute pustular eruption, which occasions the aphthous crust; and when the nipples are tender, they can scarcely fail to become more or less inflamed and excoriated, by the impressions of this acrimonious secretion. In hospitals, where several infants often suckle the same nurse in succession, it is not improbable that the occurrence of the disease may sometimes be favored in this way. The natural predisposition to the disease, appears to be much stronger in some families than in others. In my own, consisting of eight children, this affection has never occurred, although all of them suffered from the usual stomach and bowel complaints of infancy.

Treatment.—As the alimentary canal is almost invariably more or less deranged in the aphthæ of infants, a principal object in the treatment must, of course, be to remedy the disordered condition of the stomach and bowels. In general, the ejections from the stomach are sour, and the alvine evacuations of a grass-green color. When this is the case, magnesia, with small portions of rhubarb and powdered valerian, will generally prove very beneficial. I have more frequently derived decided advantage from this mixture, than from any other mode of administering magnesia. From three to four grains of magnesia, with two grains of rhubarb, and one grain of powdered valerian, should be given every two or three hours, until the bowels are freely evacuated. If there is much general irritability and restlessness, the tepid bath, followed by a drop or two of laudanum, should be employed after the magnesia has operated on the bowels. The mucous membrane of the intestines is apt to become highly irritated in severe cases, after the aphthous eruption has continued for some days. The alvine evacuations, in such instances, become very frequent, small, watery, with occasional streaks of blood, and painful; and the margin of the anus red and extremely sensible. In cases of this kind, a large emolient poultice over the abdomen, in conjunction with the internal use of minute portions of Dover's powder, with a solution of gum arabic as drink, has frequently proved highly beneficial in my practice. Dr. Dewees speaks very favorably of the *oil of butter*, when the bowels are much irritated. "The oil of butter is prepared by putting a lump of perfectly sweet butter into a cup, and pouring on it a quantity of boiling water, and agitating it well with a teaspoon, that it may be deprived of its salt—the oil is then skimmed off, as it is wanted. A teaspoonful may be given three or four times daily." I have used this oil in a few instances, but it did not appear to answer quite so well as a pretty thick solution of gum arabic, given in teaspoonful doses at short intervals. Magnesia, and other purgative remedies, seldom fail to do harm in cases attended with much intestinal irritation. In a few instances of extremely obstinate aphthæ, accompanied with frequent irritating stools, and an excoriated state of the anus, I have procured marked benefit from a very weak solution of the nitrate of silver. Incompatible as the article may seem to be with a highly irritated state of the mucous membrane of the bowels, it nevertheless often exerts a very soothing effect on this tissue, when under peculiar forms of irritation. I have given about half a teaspoonful of a solution of a grain of this article to two ounces of water, every four hours, to infants between two and six months old, with unequivocal advantage, and without the slightest aggravation of the sufferings of the patient. In cases attended with much acid in the stomach, without a great deal of intestinal irritation, or diarrhœa, limewater, with a weak infusion of peruvian bark, usually produces an excellent effect. When the acidity of the primæ viæ is accompanied with free diarrhœa, without any symptoms of inflammatory irritation of the bowels, prepared chalk, in union with minute portions of Dover's powder, generally proves decidedly useful. From four to six grains of the chalk, with the fourth of a grain of Dover's powder should be given every two or three hours, until the diarrhœa is checked, and the discharges assume a more natural color. I have given powdered borax internally in aggravated cases of infantile aphthæ, with very decided advantage. There is nothing in this article that forbids its internal employment

The Germans use it frequently in this way; and I have, myself, often resorted to it, in bowel complaints, with evident benefit. In the present disease, I am persuaded that it may be given internally, with peculiar advantage, in the severer forms of the complaint accompanied with frequent irritating diarrhœal discharges. I have been in the habit of applying large fomenting poultices over the abdomen, in cases of an aggravated character; and I am satisfied that this application is capable of doing much good. When the disease runs on for a long time, and the little patient becomes much exhausted, mild tonics and stimulants should be employed to support the system. Weak wine whey—infusion of cinchona, or a weak solution of quinine, in moderate portions, may be resorted to for this purpose.

If the infant is not weaned, it should receive no other nourishment than its mother's milk. If it is nursed with artificial nourishment, nothing but the most bland alimentary preparations ought to be used. A solution of gum arabic, cow's-milk and water, barley-water and weak chicken or beef tea, form proper articles of food for this purpose. If the child is nourished at the breast, an attention to dietetic regulations on the part of the mother, is believed to be of considerable importance. She ought to avoid the ordinary articles of vegetable food, as they favor the generation of acid in the primæ viæ. All kinds of spirituous and fermented drinks, too, have an unfavorable tendency, and ought to be particularly avoided. The more digestible meats, soft-boiled eggs, rice, stale bread or crackers, fresh butter, with weak tea or coffee, constitute appropriate articles of nourishment in cases of this kind.

Local applications are generally highly serviceable, and in slight cases, are, by themselves, often sufficient to remove the disease in a few days. Borax is a familiar remedy with nurses and mothers, as well as with the profession, for this purpose; and it is doubtless the most valuable article we possess, as a local remedy in this affection. It may be used in the form of powder or solution. If the former is employed, two or three grains of it, mixed with a small portion of pulverized loaf-sugar, must be thrown into the mouth every two or three hours. If the solution be used, a drachm of the borax should be dissolved in two ounces of water. This may be applied to the mouth, with a soft linen rag, tied to the extremity of a pliable piece of whalebone or wood, or with a soft feather. The powder, however, is the most convenient mode of applying this remedy. In making local applications, care should be taken that the aphthous crust be not rudely rubbed off. This always causes much pain to the infant; and is calculated to increase the inflammation and keep up the disease. The practice of forcibly rubbing off the aphthous eruption with a piece of linen, on the point of a finger—so common with ignorant nurses, is extremely reprehensible. Nothing can be gained by this rude and painful treatment, and much mischief may readily result from it to the little patient. When rubbed off in this way, the crust is, almost always, soon renewed in an aggravated form, and the irritation in the mouth is generally much increased. So long as the aphthous incrustation remains white, the borax may be deemed the most efficient local remedy. When the eruption assumes a yellow or brown color, however, it frequently fails to do any decided good. In such cases, Dr. Dewees generally employs "the armenian bole, in fine powder, with loaf sugar," small portions of which mixture, are, from time to time, thrown into the mouth, as directed above for the borax. "Should this fail," he says, "to give pretty speedy relief, and particularly if the mouth be very red, livid or ulcerated, we then have recourse to a weak decoction of bark." A half ounce of powdered bark, boiled about thirty minutes, in half a pint of water, forms a proper decoction for this purpose. "About the third of a teaspoonful of this is put into the child's mouth, every hour or two." I do not doubt that these remedies are capable of procuring much relief in cases of this kind. Instead of the armenian bole, however, I prefer using a weak solution of the nitrate of silver, in the proportion of a grain to an ounce of water, and applying it with a soft piece of linen fixed to the end of a thin piece of whalebone. Nothing need be apprehended from the introduction of a small portion of this fluid into the stomach. On the contrary, its effects on the morbid condition of the mucous membrane of the alimentary canal, are often decidedly salutary in cases of this kind. A decoction of oak-bark, particularly where there is much diarrhœa, will sometimes produce very good effect as a local remedy.

As the acrid alvine discharges are very apt to inflame and excoriate the parts about the anus, constant attention should be paid to keeping these parts as clean as possible. The nates should be frequently washed with tepid milk and water, or with flax-seed tea; and after they are carefully dried, fresh lard should be applied over the irritated parts, to afford them some degree of protection against the impressions of the acrid evacuations. When the inflammation and sensibility of these parts become very severe, they should be occasionally, washed with a weak solution of sugar of lead, mixed with proper portions of a watery solution of opium.

[I am entirely satisfied, that some cases of aphthous sore mouth of infants and young children resist our efforts to cure, because we overlook the scrofulous taint inherent in them. Under this conviction, I advise a trial of a weak solution of hydriodate of potash, like the one named on page 167.

There are other cases in which there may be no special taint in the system, or, at least, none that is appreciable. In some of these, it will be found that the remedy so successful in cancrum oris, and introduced by Mr. Hunt, viz. the chlorate of potash, will be decidedly salutary. It matters not, whether its action be attributed to an excess of oxygen which it contains, and which it freely furnishes to the depraved blood, or otherwise. This speculation may or may not be true. The invigorating action of the medicine, and its power to heal, are now undeniable. From five to twenty-five grains may be given, in the course of a day, to infants from six months to three years old. It is best administered in sweetened water, and in divided doses, so that the above quantity may be taken in the period specified.

In regard to local applications, nothing has appeared to me so frequently beneficial as brown sugar, or molasses, or honey, applied, by means of a finger, to all the sore spots. It will often prove signally serviceable to swab the entire mouth with a solution of the liquid chloride of soda, five or six times a day. A drachm to four ounces of water will make a suitable mixture.

These remarks apply with equal force to the item on the next page.]

CHAPTER XVI.

ULCERATION OF THE MOUTH.

CHILDREN are liable to an ulcerative affection of the mouth, which is evidently, entirely distinct in its origin and character, from the ordinary aphthous eruption. It consists, in a number of small ash-colored and excavated ulcerations, with elevated edges, situated about the frœnum, and along the inferior margin of the tongue, the gums, and on the cheeks. The ulcers usually begin in the form of small, red, slightly elevated and painful points. At first they are superficial, and occasionally even somewhat raised above the surrounding skin; but in the course of a day or two, the edges rise up, and the ulcerated surface becomes considerably excavated. When the ulcers appear on the upper surface of the tongue, which, however, occurs but seldom, they are generally quite superficial, appearing more like excoriations than actual ulcerations.

The disease commences with slight symptoms of febrile irritation. The child manifests some degree of lassitude and restlessness. The skin becomes warmer and dryer than natural, the pulse somewhat accelerated and sharp, the bowels usually costive; there is generally much thirst; the tongue is coated with a thin white fur, over which, a thick layer of transparent slime is spread, and there is a constant profuse discharge of saliva and mucus from the mouth. The mind and body are peculiarly irritable. The child is generally exceedingly fretful and uneasy, "especially when it is about to take the nipple, which it frequently seizes, and then lets go, with a whining cry as if in pain."* The febrile symptoms usually continue for two or three days, and often much longer, before the ulceration commences. After the ulcers are formed, however, and the slavering is profuse, the fever generally subsides. In some instances the ulceration of the gums and cheeks becomes very extensive. In cases of this kind, a slow, exhausting fever is apt to occur, which generally renders the management of the complaint very difficult. I have met with two cases of this disease, in which the gums were almost entirely destroyed. In one of them, the whole inferior maxilary bone was at length deadened and separated, and was removed by Dr. McLellan. These aggravated instances of the complaint, are fortunately not common, and the disease is, in general, easily managed when early attended to.

This affection is almost always associated with weak or disor dered digestive functions, and a bloated and torpid state of the bowels. Children whose breath is offensive, with a variable appetite, and a tumid and hard state of the abdomen, are most liable to this complaint. The irritation of dentition, doubtless, contributes, in some degree, to the production of the disease; but the primary source of the complaint, appears to be located in the alimentary canal.

Treatment.—Purgatives are highly useful remedies in this complaint. The bowels should be freely evacuated, though not with harsh or very active purges. A small dose of calomel, followed, in the course of four or five hours, by a suitable dose of castor oil, will answer this purpose very well. The oil without the calomel, or a proper dose of magnesia, should be repeated daily, until the febrile symptoms are subdued. Even where no fever is present, mild laxatives are highly useful, more especially, if the abdomen be full and somewhat tense. I have known much benefit derived, from the use of a few mild emetics in cases of this kind. When the breath is offensive, and there is a tendency to nausea and vomiting, the exhibition of an ipecacuanna vomit, will frequently do much good. In a case of a severe character, which I saw, about a year ago, I ordered five grains of ipecacuanna, with two grains of calomel. Active vomiting was induced, and three or four alvine evacuations followed. On the following morning, the child's mouth was evidently better; and it continued to improve rapidly. The tepid bath, and gestation in the open air, if the weather be mild, will often aid considerably in arresting the local ulcerative affection. After the operation of a purgative, the general irritability of the system should be allayed, by a few drops of laudanum, or one or two grains of Dover's powder. In using calomel in this affection, great care ought to be taken, lest it affect the gums—an occurrence, which could hardly fail to impart a dangerous character to the ulcerations.

When the febrile irritation is subdued, much advantage may be procured from local applications. A solution of the sulphate of copper, mixed with a portion of honey, will generally soon improve the appearance of the ulcers, and hasten their healing. Ten grains of the sulphate should be dissolved in about three teaspoonfuls of water, to which four teaspoonfuls of honey must be added. This solution must be applied to the ulcers, once or twice daily, by means of a strong camel's hair pencil. Dr. Dewees advises the addition of two drachms of powdered bark, and a drachm of powdered gum arabic to this solution; but I have not found it to answer better, than the simple solution I have mentioned. Touching the ulcers, with a solution of the nitrate of silver, also, is an excellent local remedy. In several very severe cases, I obtained more decided benefit from this application than from the sulphate of copper. In slight instances of the disease, a strong decoction of oak bark, with a small portion of alum dissolved in it will generally suffice to arrest the progress of the ulcers, and dispose them to healing. I have derived evident benefit, in cases of this kind, from the internal use of small portions of powdered charcoal.

The diet should be particularly attended to. If the child is still nourished at the breast, its mother's milk is doubtless the best nourishment. If it has been weaned, however, nothing but the simplest and mildest articles of food should be allowed. If, however, the child has been previously, almost exclusively nourished by farinaceous aliment, it will in general be useful to change it, in part, for beef or chicken tea, or very light and simple broths. Solid food must on no account be allowed; more especially salted meats or fish.

Dr. Underwood has described a variety of ulceration of the mouth, under the name of *Aphtha gangrenosa*, which appears to differ materially from the preceding affection. It seldom oocurs in children under two years old, and has been but rarely noticed after the ninth year of age. It usually commences with a swollen spongy and dark-colored condition of the gums, attended by "great tenderness of the inside of the cheeks and mouth." In the course of a day or two, small dark-colored ulcers appear on "the gums, the inside of the lips and upon the tongue;" and occasionally, ulcers of the same appearance occur on the tonsils and uvula. "As the disease proceeds, the cheeks become slightly tumefied, and are very tender when touched; and there is often an unusual redness upon that portion of the skin which covers the lower jaw." The tongue is covered with a thick yellowish brown fur, becoming darker as the disease advances, and the teeth are apt to become covered with a black sordes. The breath becomes extremely offensive after the ulceration has made some progress. There is usually a very copious flow of saliva from the mouth. There is from the commencement of the complaint considerable febrile irritation. The child becomes languid and feeble, the pulse small and quick, and the skin very warm and dry, the appetite is impaired, but the little patient often sleeps well, and at times appears cheerful and disposed to amuse itself with play. The disease may continue for a period of from two to five or six weeks.

Dr. Dewees says that this variety of ulceration of the mouth, occurs only, when children are cutting teeth, particularly when a number of back teeth, are about making their appearance at the same time; and this accords entirely, with my own observations. It is a disease of the gums, arising from cutting the last of the first set of teeth—it therefore never attacks after this process (primary dentition) is completed; or at least not until the teeth of the second dentition are about to appear. The gums at first swell and become dark red and very tender. In the course of two or three days, "the parts of the gums immediately over the teeth about to be protruded give way by ulceration to a greater or less extent" (Dewees.)

This disease, though of an alarming appearance, is by no means a dangerous affection. In children of a sickly and scorbutic habit of body, however, it sometimes becomes very troublesome, and resists, for a long time, the usual remedial applications in diseases of this kind. The swollen parts of the gums ought to be divided down to the advancing teeth; and the child's mouth frequently washed with a strong decoction of peruvian bark. I have used a solution of the chlorite of lime, with a most excellent effect in several severe instances of this affection. I dissolved a drachm of the chlorite in six ounces of water, and applied it with a soft piece of linen tied to the end of a probe. A decoction of oak bark too, with or without a small portion of alum forms an excellent application.

CHAPTER XVII.

OF COLIC.

There are very few infants who do not suffer more or less from colic pains. In many instances, indeed, they are so slight and transient, that they require no particular remedial attention. Very frequently, however, they become extremely harassing, recurring often, and with great severity, during the first five or six months of infancy. In some cases, these painful attacks occur several times daily, at uncertain intervals; and in others, they come on at regular periods, assuming a distinctly periodical progress.

In slight cases of colic pains, the infant suddenly becomes very fretful, draws up its legs towards the abdomen, and whines or cries for a few moments and then resumes its usual quiet condition. After a very short interval of rest, another attack, of the same kind occurs, and again soon subsides; and thus, it will go on, with alternate spells of crying and quietude, until a volume of wind breaks from the stomach or bowels, or a thin fœcal discharge takes place, when entire relief ensues. In many cases, however, these manifestations of suffering are much more vehement and distressing. There is excessive, long-continued and unappeasable screaming, forcible drawing up of the legs, or violent kicking, flushing of the face, and various writhings of the body with a distended, tense and tympanitic state of the abdomen. In the majority of instances, these attacks are associated with habitual symptoms of indigestion and disorder of the bowels—such as acid eructations, flatulency and diarrhœa. The stools are frequently of a grass-green color, or slimy, and occasionally mixed with portions of imperfectly digested food. In some cases, however, the alvine discharges are neither too frequent nor of an unnatural appearance, although the infant almost daily experiences severe paroxysms of colic. The breath often has a peculiarly acid smell, and when vomiting occurs, which, however, is not often the case, the milk, if the child is nourished at the breast, is thrown off in dense coagulated masses. When the colic pains come on frequently, and are attended with prominent symptoms of indigestion and diarrhœa, the general health of the infant almost always suffers obvious derangement. The child becomes pale, feeble, and fretful, and does not thrive. Sometimes, however, the appetite remains good, and although the child suffers frequent and very severe attacks during a period of two or three months, yet no inroads appear to be made on its general health, and it goes on thriving, as if it were in every respect perfectly healthy. This is most apt to occur in those instances, where the paroxysms of colic recur at regular intervals, or in a periodical manner. This form of the complaint, is seldom connected with any decided manifestations of indigestion; and instead of being attended with loose and griping stools, it is very generally accompanied by constipation or slowness in the action of the bowels. Dr. Dewees states, that the paroxysms, usually, occur between four and six o'clock in the afternoon; but in this respect, I have not noticed any particular uniformity in the cases that have come under my own observation. I have known the attack to occur, regularly at a particular period in the forenoon; and I have recently prescribed for a case in which the paroxysms, uniformly came on between one and two o'clock every night.

There evidently exists a very material difference between these periodical cases, and the ordinary irregular form of the complaint. The latter appear to depend on a dyspeptic condition of the alimentary canal, and are manifestly greatly under the influence of diet and other causes capable of producing weakness or irritation of the digestive organs. The immediate cause of the colic pains, in the majority of cases, appears to consist in violent flatulent distention and irritation of some portion of the bowels. That this is the case seems very obvious from the drum-like distention of the abdomen which usually occurs during the paroxysm, and from the relief which almost always follows the free discharge of wind from the bowels. The foundation for this painful affection is frequently laid during the first two or three days after birth. The extremely reprehensible practice of filling the infant's stomach with artificial food immediately after birth, before nature furnishes the appropriate nourishment, is, I am persuaded, a very common source of this distressing complaint. The child's stomach is thus often, in the very beginning of life, thrown into a state of irritation and feebleness—so that even the congenial nutriment afforded by the maternal breasts, will pass into the bowels in an imperfectly digested state, and give rise to acid and flatulent distention of the intestines. The exhibition of active purgatives, for the removal of the meconium, also, is well calculated to originate this complaint. After the digestive organs have once been brought into a state of irritation or functional derangement, the mildest and most appropriate nourishment, will not be properly digested; and this state of things must almost necessarily continue until the digestive energies have acquired a considerable degree of development; for the acid and flatus which are generated in consequence of the weakened condition of the stomach tend continually to keep up the deranged state of the digestive functions. Thus when the delicate stomach of the new-born infant is overloaded with any of the usual alimentary preparations, it can scarcely escape being, in some degree, weakened and irritated. The very first nourishment which the child afterwards draws from its mother's breast, will, probably, not be duly digested. Acid and wind will, therefore, be generated. These morbid products become additional causes of irritation and disorder of the digestive organs, and thus the complaint, generating as it were its own cause, may go on, for many months, however mild and fitting the nourishment may be. I know from repeated experience, that infants who receive no aliment, or only small portions of suitable nutrient fluids, until the appropriate nourishment is supplied by the maternal breasts, will, in general, be much less liable to colic and griping pains, during the first two or three months of infancy, than such as are gorged with food, in the usual way, soon after birth. When the digestive organs are thus early disordered, the colic pains usually commence within three or four days after birth. The stools become frequent, green, watery, or curdled, and very painful, and in most cases, aphthæ supervene, before the end of the second week. In general, errors in diet, constitute the ordinary source of the colic, and griping in infants. Overdistention of the stomach, especially with artificial food; or administering nourishment at such short intervals that the stomach is constantly kept in a state of repletion and exercise, is particularly apt to give rise to these harassing complaints. Even the most appropriate articles of food, will not prevent the occurrence of colic and griping, if they are very frequently and superabundantly administered, so as to deprive the digestive organs of the requisite and regular intervals of rest. Not unfrequently, very painful disturbance of the alimentary canal, arises from a bad state of the mother's or nurse's milk. Mental disturbance in the nurse sometimes exerts the most extraordinary influence in this respect, by the changes which it causes in her milk. A few years ago, I met with a very striking instance of this kind. I was called to an infant about five months old, extremely harassed with colic pains. Most violent and protracted paroxysms of screaming and agitation occurred, three or four times daily. Its bowels were disordered, and frequent ejections of acid, fluid mixed with coagula of milk, took place from the stomach. The child was nourished exclusively at its mother's breast. I was told that these attacks first came on, about two weeks before I saw the little patient, and soon after the mother had unexpectedly heard of the sudden death of her husband at sea. Previous to this distressing occurrence, the infant appeared to be perfectly healthy. I advised immediate weaning, and the use of two parts of cow's milk with one part of warm water, for its nourishment. In less than twenty-four hours after the child was put on the exclusive use of this food, it was almost entirely freed from its painful attacks; and in a few days more, appeared to be as well as it was, previous to the first accession of the complaint. The children of nervous, fretful, and ill-tempered women are much more liable to colic and other forms of gastro intestinal disorder, than those of placid and equanimous mothers. Protracted grief, sorrow, or despondency in the nurse, often gives rise to very severe and continued colic pains in the suckling, which nothing but weaning or a change of the nurse is capable of preventing.

Even physical pain in the nurse, when long-continued and harassing—such as tooth-ach and neuralgia, may occasion very obstinate and severe disorder of the alimentary canal in the nursling. Dr. Dewees relates a very curious instance of this kind. In the second week after birth, the child began to experience moderate attacks of colic; which gradually increased, in violence and frequency, until they became extremely severe and protracted. No relief could be obtained, except from laudanum, given "in large and constantly increasing doses." The fluid thrown from the stomach was sour; and the alvine evacuations were griping, thin, and often green. There was much emaciation. "In this situation did things continue, until the child was five months old, by which time it was (without a figure) nothing but skin and bone." In one of his visits the Doctor noticed the mother applying her hand very suddenly to her face and pressing it firmly. On being asked the cause of her doing so, she stated that she had been for a long time much tormented with tooth-ach. The Doctor advised her to have the tooth immediately extracted. "This was accordingly done; and from that day the child began to recover, and in a short time was perfectly restored to health."

Inattention to proper dietetic regulations, and consequent disorder of the digestive functions, on the part of the mother or nurse, may also give rise to such alterations in the milk, as will occasion colic pains and griping in the infant. Under the head of weaning, several other circumstances, in relation to the mother have already been mentioned, as sources of more or less serious disturbance in the stomach and bowels of infants. Of these a deficiency in the quantity of milk furnished by the breasts is a very common indirect cause of this painful affection in infants. To supply this deficiency, artificial nourishment must, of course, be resorted to: and in doing so, the child's stomach is apt to be overloaded with inappropriate articles of food.

Colic pains and griping may also proceed from the influence of cold—particularly from inattention to proper changes of the child's wet and cold linen, and from insufficient clothing and warmth about the abdomen and inferior extremities.

It has already been observed above, that the periodical form of this complaint, appears to differ very materially both in its character and mode of origin, from the ordinary cases of irregular flatulent colic. It is seldom associated with a dyspeptic condition of the digestive organs; and the beneficial influence of dietetic regulations, is certainly much less obvious in cases of this kind, than in the usual instances of the complaint; nor are those remedies which are generally relied on for preventing the generation of acid and wind in the primæ viæ, or for removing them, capable of procuring any decided advantage in these periodical cases. These attacks continue to recur regularly, for several months; their recurrence usually ceasing spontaneously, "as soon as the child reaches the age of three months." Dr. Dewees thinks that cases of this kind, depend, probably, "upon some constitutional peculiarity, over which we have but a temporary control." It appears to me likely that they do not differ from the gastralgia of adults —a form of neuralgic affection, which frequently assumes a periodical character, and which, like the present complaint, can seldom be materially influenced by the ordinary remedies for colic and griping pains. The attack in cases of this kind, generally comes on suddenly, and after having continued with occasional transient remissions for an indefinite period, varying from a few minutes to one or even two hours, it ceases as abruptly as it came on. From a close attention to several instances of this form of the complaint, I have been led to suspect that the pain, in such cases, is generally seated exclusively in the stomach. The pain is not aggravated by taking food or drink into the stomach; and in one instance, which came under my notice, the sufferings were almost always obviously mitigated, by administering a few teaspoonfuls of thin arrow root, barley water, or of a mixture of milk and water. During the attack there is usually a good deal of flatulent noise in the abdomen, attended with epigastric distention, and eructations of air, which, however, possess neither acidity nor fetor. The digestion is nearly always good, and sometimes even more rapid than in a perfectly healthy condition of the stomach and bowels.

The colic of infants, as has already been observed, is by no means a dangerous, though always an extremely distressing affection. Nevertheless when the flatulent distention becomes very great, it may so weaken the muscular coat of a portion of the intestines, as to give rise, ultimately, to habitual costiveness of a very troublesome and unmanageable character. In some cases a highly irritated or sub-inflammatory condition of the mucous membrane of the bowels is excited in the progress of the disease, giving rise to painful and exhausting diarrhœa, a hard and tumid state of the abdomen, derangement of the digestive functions, and a general irritable and irritated condition of the sanguiferous and nervous systems. These consequences, however, rarely ensue, except where errors in diet are habitually committed, or where harsh and irritating purgatives and other medicines are frequently employed.

Treatment.—In the ordinary cases of infantile colic, associated with derangement of the digestive functions, or with habitual acidity and flatulency of the primæ viæ, judicious dietetic regulations are all-important remedial measures,—without which the most appropriate remedies will, at most, procure but temporary palliation. When there is reason for believing that the mother's milk is unwholesome, an effort should be made to ascertain the cause of its faulty condition, which may, perhaps consist in habitual improprieties in diet, or in some accidental and removeable disorder on the part of the mother. Should the first be the case, proper dietetic measures should be immediately adopted by the mother or nurse, and every thing that tends to promote the generation of acid in the alimentary canal carefully avoided. If, notwithstanding a judicious regulation of the mother's diet, the infant continues to be harassed with frequent attacks of colic, some advantage may occasionally be obtained by applying it to the breast at long intervals, and substituting small portions of suitable artificial nourishment—such as very thin arrow-root, barley water, or a mixture of equal parts of cow's milk and water. When the child has been partly nourished by artificial food, in consequence of a deficient secretion of milk, we may sometimes derive much benefit from a change of the artificial portion of nourishment. A striking instance of the advantage that may occasionally be obtained in this way came under my observation a few weeks ago. The infant about two months old was almost constantly in a state of alarming torment. The mother did not furnish sufficient milk for its sustenance, and it was regularly fed with a mixture of equal parts of cow's milk and water. Arrow-root, barley-water, tapioca, and sago, in suitable preparations were successively tried, but without the least benefit. A mixture of weak chicken-tea and a very thin preparation of arrow-root, in the proportion of one part of the former to two parts of the latter, was finally resorted to. By the use of this nourishment, the complaint was soon very obviously mitigated; and under the additional influence of small doses of magnesia and powdered valerian, yielded almost entirely in the course of nine or ten days. As the error often consists more in the *excess*, than in the quality of the food, particular attention ought always to be paid to this point.

Infants who are partly nourished by artificial food, are particularly liable to be injured by over-feeding. I have repeatedly known great benefit derived from a mere reduction of the quantity of nourishment habitually taken by the infant—and particularly by lengthening the intervals between the meals so as to avoid the injurious practice of taking fresh food into the stomach before that which was previously taken has been fully digested and passed into the intestines. There are but few cases of flatulent colic that may not, in some degree be benefited by a judicious management of the diet. Frequently, however, the relief obtained from measures of this kind is but small, and recourse must be had to other means for correcting the disordered condition of the stomach and bowels, and especially to temporary *palliatives* for mitigating the violence of the attacks.

Magnesia by its antacid and purgative effects, is one of the most useful remedies we possess for the management of this complaint. When there is a prevailing tendency to generate acid in the primæ viæ, small doses of this article, given two or three times daily, almost always produce an obvious abatement in the frequency and violence of the attacks. I have generally given it in union with small portions of powdered valerian root, and when the bowels are torpid, with the addition of a few grains of rhubarb. Three grains of magnesia, with two grains of powdered valerian, may be given twice or thrice daily, until the acidity in the stomach is removed. If this do not keep up a sufficient action of the bowels, the proportion of magnesia should be occasionally, increased, or a few grains of rhubarb added to the powders. Valerian is an excellent auxiliary to the magnesia, in cases attended with weakness of the digestive powers. I have used a solution of the bi-carbonate of soda in an infusion of valerian root, with very obvious benefit, in cases attended with much acidity. Twenty grains of the bi-carbonate of soda may be dissolved in two ounces of valerian infusion,* to which two or three drachms of ginger syrup may be added. A teaspoonful of this solution may be given several times daily, to an infant of from one to three months old. With the view of invigorating the digestive organs, and thereby impeding the formation of acid and flatus in the alimentary canal, small doses of a very weak infusion of colomba or of quassia may be resorted to with a prospect of considerable advantage, in cases associated with general feebleness and relaxation and a dyspeptic condition of the stomach. When the complaint is accompanied by thin, green and acid diarrhœal discharges, some advantage may be gained from the occasional administration of very small doses of calomel, either by itself or in union with minute portions of ipecacuanna. A frequent employment of this article, however,—particularly when given in full doses, is by no means advisable. Some years ago, I administered, in several cases of this complaint attended with constant acidity, flatulency, and diarrhœa, a mixture composed of five grains of prepared chalk, three grains of the powdered root of simplocarpus fœtida (*skunk cabbage*) and two of rhubarb, every morning and evening for five or six days in succession, with unequivocal benefit. The difficulty of procuring the powdered skunk cabbage in our shops, has since that time, prevented me from giving it again; though I am inclined to believe, that it possesses very excellent powers, both as a palliative, and as a means for invigorating the depressed digestive energies of the stomach. When costiveness prevails, this article may be given in union with magnesia, in the way mentioned above, or with valerian.

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* The infusion should be made by macerating one ounce of the valerian root in a pint of warm water, for about twenty-four hours.

In cases attended with frequent watery, green, or curdled and sour stools, accompanied with violent griping, antimonial emetics are strongly recommended by Armstrong. When the abdomen is not tender to pressure, and the little patient is free from febrile irritation, an occasional emetic dose of antimonial wine, followed by suitable doses of Dover's powder, will sometimes do much good in such cases. An instance of the usefulness of this practice, came under my notice about six months ago. The infant, about five months old, was extremely harassed with frequent small diarrhœal discharges of a watery and grass-green character; and each evacuation was preceded by excessively severe and protracted griping, as was evident from the child's vehement and unappeasable screaming. An antimonial vomit was given in the morning, followed after its operation by a grain and a half of Dover's powder. The disease was manifestly mitigated by these remedies; and by repeating them three times in the course of about a week, and employing, afterwards, small doses of prepared chalk and Dover's powder, in conjunction with the occasional application of rubefacient embrocations to the abdomen, the bowels were brought to a pretty healthy condition, and the little patient freed of his sufferings. In general, however, emetics are not appropriate remedies in infantile colic, except in cases where the morbid excitement is concentrated on the large intestines, and the stomach is in a languid or inactive condition. As a mere palliative, an emetic dose of *ipecacuanna*, will sometimes procure considerable relief when administered during, or at the commencement of the paroxysm, by expelling the wind and thus removing the distressing distentions of the stomach and duodenum. A repetition of emetics, however, could hardly fail, in the ordinary cases of the complaint, to disorder the digestive functions, and to favor the occurrence of inflammatory irritation in the stomach and bowels. The application of a large warm poultice over the abdomen, having previously rubbed the skin with hartshorn liniment, or, with the common camphorated mixture, will often assist materially in subduing the complaint, when it is accompanied with much intestinal irritation, manifested by frequent small, thin and acrid or very fœtid evacuations.

As a temporary palliative for lessening the violence and duration of the attacks, Dr. Dewees, relies chiefly on the following mixture,[*]—which, he asserts "rarely fails to give instant relief, and sometimes even effects an entire cure." Twenty drops of this mixture should be given when the child is in pain, "and if not relieved in half an hour, ten drops more are to be administered." I have found this remedy, to procure prompt relief in some instances, but it has not been so uniformly beneficial, in my hands as the following preparation. Dissolve one drachm of camphor in an ounce of sulphuric æther. Take thirty drops of the solution, twenty grains of magnesia, six drops of laudanum, and mix them together with an ounce of fennel-seed tea. Of this mixture a teaspoonful may be given, to an infant from two to six weeks old; and if sufficient relief be not obtained in half an hour, about half a teaspoonful more should be administered. I have frequently procured prompt relief by administering two or three drops of the simple ethereal solution of camphor, in a teaspoonful of sweetened water, and I am satisfied that we have not a more efficient palliative, for relieving the distressing pains attending this complaint. When remedies of this kind must be frequently employed, camphor is, in some respects preferable to opium, unless diarrhœa and much intestinal irritation be present, in which case opiates in some shape or other can hardly be entirely dispensed with. In cases associated with diarrhœa and griping, the camphor may be advantageously given in union with laudanum. Two drops of the solution of camphor with half a drop of laudanum may be given three or four times in the course of a day, when the pains are violent and of protracted duration.

Gentle frictions with dry flannel or with the bare hand over the epigastric and umbilical regions, sometimes aids considerably in procuring the expulsion of the confined flatus. The introduction into the rectum, of a soap suppository during the colic attack, frequently produces copious discharges of wind and fæces, with great relief to the little sufferer. When costiveness prevails, lax-

[*] ℞. Magnes. calcinat. ℈i. Tinct. assafœtidæ gtt. lx. Tinct. opii. gtt. xx. Aq fontan. ℥i. M.

ative enemata, with the addition of twenty or thirty drops of tincture of assafœtida, are appropriate and often very efficient means of temporary relief.

In the periodical form of the disease, dietetic regulations rarely afford any decided advantage. The diet should nevertheless be carefully attended to; for there can be no question as to the injurious tendency of errors in this respect. The abovenamed palliatives may be resorted to with temporary benefit; but the relief obtained by remedies of this kind, is seldom so prompt and considerable in the present as in the common irregular form of the complaint. When employed at all, they ought to be given, "the instant the paroxysm is about to commence;" for when the colic is once fully developed, it very rarely yields in any obvious degree, to remedies of this character. The only article that I have found, capable of occasionally producing a decidedly favorable effect, is a few drops of the spirits of turpentine in a teaspoonful of good sweet oil, or milk. In some instances I have known this remedy to effect a speedy subsidence of the pains in this variety of the disease. From three to six drops of the turpentine may be given to a child of from one to three months old, and the dose may be repeated in the course of an hour without the least risk of injury. Viewing it as a strictly periodical complaint, Dr. Dewees has administered a decoction of the bark during the intervals of the attacks, and, as he informs us, "with the happiest effect in several instances." Formerly I employed the prussiate of iron in several cases of this kind; and in one instance, the effects of this remedy were surprisingly beneficial. To an infant between one and three months old, a half a grain of this article may be given every three or four hours during the intervals of the paroxysms. In the successful case just referred to, this preparation of iron was given in union with powdered valerian. The infant was about two months old. A violent attack of colic occurred about six o'clock, every evening, and generally continued for nearly an hour. The child had been affected with the complaint for upwards of three weeks before I saw it. After the bowels were freely evacuated by a dose of a few drops of syrup of rhubarb, I prescribed half a grain of the prussiate of iron with three grains of powdered valerian root to be taken every three hours during the intermission. The first paroxysm after these powders were taken, was perhaps, as severe as any of the preceding ones. The medicine was, however, continued, during the next intermission; and now, the attacks gradually subsided in violence and duration, until, at the end of eight or ten days, the child was almost entirely freed of the complaint. I have, since this case, employed the same combination in another instance; but the effects, though not without obvious advantage, were by no means so promptly and decidedly beneficial as in the former instance. As the bowels are generally torpid in these cases, mild laxatives, must be used from time to time, to keep up the requisite alvine evacuations. Active purging, however, is not only useless, but often decidedly injurious—a fact which I have, in several instances, seen strikingly verified. It would, I think, in general be better to procure the necessary evacuations by laxative enemata, than by aperients taken into the stomach. If the latter be preferred, fresh cold-pressed castor oil, and syrup of rhubarb, are the most appropriate.

The practice, so common with mothers and nurses, of administering various irritating substances of an anodyne or carminative character, is often carried to a highly injurious extent, and cannot be too severely censured. The habitual use of opiates in infantile colic, almost always leads to very unfavorable, and often to very distressing and dangerous consequences. In order to obtain the requisite degree of anodyne effect, the dose must be progressively increased; and thus a habit is soon formed, which renders the discontinuance of the anodyne a source of inexpressible distress and inquietude, whilst its continuance, in increasing doses never, fails to operate perniciously on the whole organization.

Under the habitual use of these treacherous palliatives, constipation soon ensues; the appetite and digestive powers fail: the body emaciates and the skin becomes sallow, dingy, and shrivelled; the countenance acquires an expression of languor and suffering, and a general state of apathy, inactivity and feebleness ensues, which, ultimately, often leads to convulsions, dropsy of the head, glandular indurations, incurable jaundice, or fatal exhaustion of the vital energies. The more immediate effects of opiates, also, are frequently extremely unpleasant, particularly in very young infants.

The pain may indeed be lulled by the anodyne, but though quieted, the infant is evidently under the influence of highly disagreeable sensations, as is manifested by the sudden startings, unnatural whining cry, and the exceedingly irregular respiration, being now very hurried for a moment, and then slow and moaning with occasional intermissions, of so protracted a duration, that "one would think the breathing had ceased altogether." All the usual soothing mixtures, such as Godfrey's cordial and Dalby's carminative, so much employed for allaying the colic pains, and griping of infants, contain more or less opium; and innumerable infants have been irretrievably injured by the habitual use of these popular nostrums.

Heating and irritating articles, such as diluted spirits, infusion of spicy and aromatic substances, soot, and repeated active purgatives may do much injury, by irritating the delicate mucous membrane of the stomach and bowels, impairing the digestive powers, and finally exciting a state of chronic inflammation in this structure, which it is always very difficult, and often impossible to remove by any subsequent care and management. The observations are addressed rather to mothers and nurses than to physicians; for it cannot be questioned that all these remedies, more especially opiates, may, by judicious management be beneficially employed in certain instances and conditions of the complaint.

[After the free evacuation of the stomach and bowels, by emetics, cathartics or clysters, or all in succession, I know of no medicine so certain to afford relief, in cases of infantile colic, as the milk of assafœtida, given by the mouth and by injection. It can be readily made at any time, by rubbing a piece of the gum, the size of an ordinary nutmeg, in three or four ounces of hot water, adding a teaspoonful of powdered gum Arabic. Give a teaspoonful every fifteen minutes, and throw an ounce up the rectum every half hour. Rub the spine well at the same time, with a mixture of half an ounce of sweet oil, a drachm of aqua ammonia, and ten drops of oil of cinnamon, moderately heated. This may be repeated, morning and night, with safety and advantage.]

CHAPTER XVIII.

OF CONSTIPATION.

Torpor of the bowels, and consequent costiveness, of more or less protracted duration, is of frequent occurrence among infants. In some instances, the bowels are habitually so very inactive, that scarcely any alvine evacuations take place, except when excited by artificial means. This state of the bowels is the result either of a constitutional habit, or of accidental causes. The former variety of costiveness is very rarely attended with unpleasant consequences, "and indeed children of such a habit of body are frequently the most thriving" (Underwood). Dr. Dewees observes, that a period of from two to ten days may intervene between the stools, in constitutional costiveness, "without the child receiving the least injury from this torpor of the bowels." I have repeatedly met with instances, where not more than two or three evacuations took place in the course of a week, without the slightest inconvenience to the infant; and Dr. Dewees mentions a case, where the stools occurred "but once in eight or ten days," for a long period, although the infant throve well and appeared to be "in excellent health." Mothers, generally, express much solicitude, in cases of this kind; and under the apprehension of evil consequences from this condition, frequently urge the administration of aperients to a very injurious extent. When the infant manifests no symptoms of ill-health, and continues to thrive well, constitutional costiveness very seldom requires any remedial interference, "though it will be prudent carefully to watch it." Where there is a tendency to convulsive affections—a tendency which is sometimes manifested in children of a perfectly healthy and robust appearance, it will undoubtedly be advisable to obviate protracted costiveness by the occasional administration of suitable aperients; for, "fine lusty infants are sometimes seized with violent convulsive fits, without any other apparent cause, than a naturally costive state of the bowels, and as uniformly recovered from the fits, merely by procuring stools and breaking off the wind" (Underwood). During dentition, also, it will, in general, be expedient to increase the frequency of the alvine evacuations, by artificial means, where there is much intestinal inactivity. The most suitable aperients, in cases of this kind, are castor oil, manna, and magnesia. I have for many years past, been in the habit of prescribing the following mixture for this purpose. It is certain, and peculiarly mild in its operation, and of so pleasant a taste that children generally take it with little or no reluctance.

℞. Ol. Ricini - - ℥ i
Magnesiæ calcinat. ʒ ii
Sacchar. Albi, - - ʒ iii
Ol. Anise, - - gtt. ii

Mix them intimately, by rubbing them together in a mortar.

One or two teaspoonfuls of this mixture may be given at a dose. During the first two or three months of infancy, we may, in general, keep the bowels sufficiently soluble by the use of manna—an article which is, perhaps, less apt to disagree with the stomach or to cause unpleasant effects in the alimentary canal of infants, than any other aperient we possess. It should be dissolved with warm water, to the consistence of a thick syrup, and given in teaspoonful doses.

Costiveness from accidental causes is a very common affection during infancy. Instances of this kind are, properly, morbid conditions, and can seldom be entirely neglected without incurring some risk of injurious consequences. A torpid state of the bowels may occur as a symptom of some obscure deviation from health. If it be not removed it may become an additional source of irritation in the system, and aggravate the latent disorder upon which it depends. Thus a preternatural determination of blood to the brain, may give rise to inactivity of the bowels, without any other obvious signs of ill-health, or disordered function. The costiveness, if it be suffered to continue, will hardly fail to increase the already preternatural determination of blood to the head, and thus a very serious affection may ultimately be developed in the brain or the alimentary canal, which might have been obviated by a judicious course of aperient remedies. The occurrence of costiveness during dentition, may always be regarded as an unfavorable event. Children almost always suffer much more general irritation, and incur much more risk of convulsions and other dangerous affections from dentition, when the bowels become torpid and constipated, than when they are moderately loose during this process.

The very reprehensible, and frequently clandestine practice, among nurses of giving opiates to infants, to make them sleep, that they may not require much attention during the night, is a frequent source of obstinate and injurious costiveness.* I met with a remarkable instance of this kind a few years ago. The infant, when about two months old became very costive. Aperients were from time to time, resorted to, but the torpor of the bowels continued, and gradually increased, until no evacuations could be procured except by large doses of the most active purgatives. The child became sickly, and much harassed with acidity and flatulent pains in the stomach. After I had for nearly a month endeavored to bring the bowels into a more regular condition, without the slightest advantage, it was accidentally ascertained that the nurse had been in the habit of giving the infant a dose of laudanum every evening to the extent of at last ten or twelve drops at once. The laudanum was now gradually withheld, and in about two weeks the child's bowels were restored to their former regular state, although its general health continued to be very infirm for several months afterwards.

Costiveness may also occur, as a consequence of particular articles of nourishment. Children who are chiefly nourished by pap, or by preparations of rice, are apt to become more or less constipated; and in general, all the usual farinaceous articles of nourishment have a greater tendency to produce costiveness, than milk and the nutrient animal fluids. In some instances, though rarely, the mother's or nurse's milk, has a constipating effect on the child's bowels: but this, probably, depends more frequently on a peculiar constitutional habit on the part of the child, than on the particular qualities of the milk. This was certainly the case in one instance which came under my notice some years ago. The mother, with an abundance of milk, suckled her twin infants, and treated them in every respect precisely alike. One of them was constantly costive, except when nourished principally with cow's milk; whilst the other child was uniformly regular in its bowels. When children are observed to become costive, and to continue so under the use of any particular kind of nourishment, an immediate change of food should be made; for a nourishment which is capable of producing this effect, will, in conjunction with the costiveness it has caused, be likely to occasion more serious disturbances in the system if its use be persisted in.

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* "Nurses," says Dr. Dewees, "are now so familiar with this drug (laudanum) that it is as regularly carried about them as their scissors or thimble, and is much more indispensable to their comfort than either of those emblems of industry. If the child does not go to sleep, or if it is even feared it will not, at the exact moment which will suit the arrangements of the nurse; or if it cry from any cause, so as to give any additional trouble, laudanum is given to make 'assurance doubly sure.'"

Accidental costiveness is usually attended with flatulency and occasional attacks of colic pains. If it be suffered to continue, it may ultimately give rise to inflammatory irritation of the mucous membrane of the bowels, which may manifest itself either by obstinate and painful diarrhœa, or swelling, tension and soreness of the abdomen, or finally, by various sympathetic affections of the head, chest or the general system.

The aperients already mentioned, will in general procure all advantages that can be derived from remedies of this kind. Cold-pressed castor oil, is an excellent laxative in the ordinary cases of costiveness. When the alvine discharges manifest a deficiency of bile—that is, when they are whitish or clay-colored, much benefit may be obtained, from the occasional administration of a small dose of calomel in the evening, followed next morning, by one or two teaspoonfuls of castor oil. Magnesia is the appropriate laxative when the intestinal torpor is accompanied with acidity in the primæ viæ. In moderate cases of constipation, relief may frequently be obtained from the daily introduction of a soap suppository into the anus. Laxative enemata also, may be advantageously employed in cases of this kind. They are especially useful, as occasional substitutes for the internal aperients, where the necessity of resorting to artifical means for moving the bowels continues a long time; for a long-continued and frequent employment of even the mildest laxatives, is apt to injure the digestive functions, and to give rise to some degree of intestinal irritation. When the abdomen is free from tenderness or soreness to pressure, frictions and gentle kneading of the abdomen with the hand, sometimes produces an excellent effect, both in constitutional and accidental colic.

CHAPTER XIX.

OF VOMITING.

Vomiting occurs more frequently, and, in general, with much less unpleasant consequences during early infancy, than at any other period of life. We often see perfectly healthy infants, who are in the habit of throwing off a portion of the contents of the stomach, several times daily, without sustaining the least disagreeable consequences from it, whatever. The vomiting in these cases arises solely from an overloaded condition of the stomach, and is not attended either by nausea, or by any strong and disagreeable vomitive efforts. It seems to be almost entirely effected by a sudden momentary contraction of the stomach, with little or no aid from the abdominal muscles and diaphragm. This harmless kind of vomiting is particularly apt to occur, in robust infants who are nourished at exuberant breasts; and it seldom happens except immediately after the infant has sucked. The milk is generally thrown off, in an unchanged condition; and the infant is so little annoyed by the vomiting that it will often preserve its usual placid and cheerful countenance, whilst the milk is regurgitating from its stomach. This variety of vomiting may therefore be regarded, rather as a salutary than a morbid occurrence; for the superabundant nourishment with which the digestive organs are habitually overloaded, would, doubtless, soon give rise to indigestion and its various disagreeable consequences, if the stomach did not regularly relieve itself by throwing off a portion of its oppressive load. So long as the infant remains healthy, and the ejections are, manifestly, mere efforts of the stomach to relieve itself of its over-distended condition, nothing ought to be done, in the way of remedial applications, to prevent the vomiting. Nevertheless, these efforts of the stomach to relieve itself, though obviously salutary, show, that the infant is habitually going beyond the proper limits of moderation in its nourishment; and as a frequent repetition of this error, however transient in its influence, may ultimately weaken the tone of the digestive organs or establish a habit of immoderate indulgence in eating, it will always be proper, to endeavor to obviate the cause of the vomiting—namely the over-repletion of the stomach, by preventing the infant from taking too much nourishment at a time. With this view, "the child should be taken from the breast, the moment it begins to dally with it, or as soon as it ceases to draw as if it were really gratifying a necessary and proper appetite." When the infant has satisfied its appetite, it ought not to be immediately jolted and dandled, but suffered to remain perfectly at rest, for at least thirty minutes, after it has been taken from the breast. The common practice of tossing and jolting infants immediately after they have taken nourishment is highly improper. In cases of the kind now under consideration—where the stomach is usually charged to the utmost of its capacity at each nursing, this practice is particularly objectionable, as it rarely fails to excite vomiting and interfere with the regular progress of digestion. If the child is kept in a state of quietude after its removal from the breast, and the quantity of its nourishment somewhat diminished, in the way just mentioned, the habit of vomiting soon after the reception of its food, may almost always be effectually overcome. The mere cessation of this inconvenience, however, is not the only advantage which may be expected from these measures. Infants who are in the habit of vomiting after sucking, from mere over-distention of the stomach, are peculiarly apt, at a subsequent period, to become affected with habitual torpor of the bowels or costiveness. I have repeatedly noticed this connection between vomiting from repletion during the early period of infancy, and habitual costiveness at a more advanced age. It would seem as if the excitability of the alimentary canal became, in a manner concentrated in the stomach. This consequence might, doubtless, be, in a great measure, obviated, by constant attention to a suitable moderation in the infant's nourishment. This is the only mode by which we may prudently attempt to prevent the recurrence of this kind of vomiting. All efforts to obviate the vomiting by medicinal agents, must not only prove abortive, so long as the infant is permitted to fill its stomach to excess, but often decidedly injurious, and should never be attempted in cases of this kind.

Morbid Vomiting may be excited by injurious or offensive substances lodged in the stomach, or occur as a symptom of some local or general affection of the body. Underwood says, that troublesome vomiting sometimes occurs in consequence of a "suppression of the discharge behind the ears; and from the sudden disappearance of some eruption on the skin." Dr. Dewees, however, doubts whether vomiting ever occurs as a direct consequence of these causes. "We have never witnessed it," he says "from either of these causes." That such cases do occur, I have had unequivocal evidence. I attended a child within the present year, affected with frequent vomiting, which was manifestly connected with an excoriation and occasional serous discharge behind both its ears. It was observed, that whenever there was a discharge from these sores, the child was free from vomiting and appeared well; but as soon as the serous discharge ceased, which it occasionally did without any obvious cause, the little patient became pale, sickly, and vomited five or six times daily. The infant was about eighteen months old. When I first saw it, there had been no discharge for five or six days. The parts were perfectly dry and scurfy. The child was pale, and threw up almost every thing it took into its stomach. I applied blisters behind the ears and on the following day no vomiting occurred. By the occasional application of blisters, and the use of equal parts of *lac sulphuris* and *magnesia*, the child finally regained a good state of health. This is the only case of this kind, I have met with.

Dentition is sometimes attended with a very irritable state of the stomach giving rise to frequent vomiting. This probably depends on an extension of the irritation from the mouth to the brain, causing a kind of erithism of this organ—a condition which is almost invariably associated with an irritable stomach and a strong disposition to vomit. The best means for checking this species of vomiting are, blisters applied behind the ears, or on the back of the neck; dividing the gums down to the advancing teeth; warm pediluvium; purgatives, or purgative enemata; and small doses of laudanum.

Vomiting is sometimes excited by a bad condition in the nurse's milk. When it arises from this cause, the child generally throws up the milk almost as soon as it is done sucking. We may readily satisfy ourselves, whether it depends upon this cause, by putting the infant upon the use of some other suitable nourishment, or suffering it to suckle another nurse. If no vomiting occurs after such a change of its nourishment, the source of the evil is manifest, and a permanent change must be adopted, unless the vomiting be but trifling.

One of the most frequent sources of vomiting, however, is a dyspeptic state of the stomach, occasioned by improper articles of nourishment, or immoderate feeding. These cases are generally attended with a prevailing acidity in the primæ viæ. The milk is thrown up in dense coagula, and has an acid smell; the child is troubled with flatulency, acid eructations, and the stools are, usually green, more or less griping, and sometimes diarrhœal. In some instances however, the bowels are torpid, and the child experiences occasional attacks of slight colic pains. In these cases the milk or food is seldom thrown up, until it has lain some time in the stomach. Dr. Dewees, observes that when the vomiting depends on an excess of acid, "the milk is thrown up in a few minutes after it has been received into the stomach." This does not accord with my own observations. I have seldom known vomiting to ensue in cases of this kind, until the milk had lain, at least, a quarter of an hour in the stomach, and, in many cases, the interval between receiving it and throwing it off again, is much longer. In such cases, the diet ought to be carefully regulated, and above all, moderation in the quantity of food taken, rigidly enjoined. If the child has been weaned, much benefit may sometimes be obtained by mixing its usual farinaceous nourishment or milk, with beef or chicken tea, or weak mutton broth. Equal parts of barley-water and chicken tea forms an excellent nourishment, where there is a strong tendency to acidity in the stomach. To arrest the vomiting, lime-water, and milk, given in repeated doses, often produces an excellent effect, where the cause of the evil consists in a redundancy of acid in the primæ viæ. If costiveness or slowness of the bowels attend, small and frequent doses of calcined magnesia, are preferable; and I have occasionally administered the bi-carbonate of soda, dissolved in a very weak infusion of colomba with prompt and complete advantage in instances of this kind.

Acid is not, however, always present in cases of vomiting, depending on a deranged condition of the digestive organs. In some instances, there is a total deficiency of acid; the milk, coming up in a perfectly unchanged state, and wholly free from any acid smell. The vomiting in such cases, seldom takes place, until the nourishment has lain a considerable time in the stomach, and it is generally preceded by very obvious signs of nausea. The child's countenance becomes pale and expressive of great anxiety and distress, and in a moment the contents of the stomach are thrown with great force. In cases of this kind, a teaspoonful of good lisbon or maderia wine, given at proper intervals sometimes produces a very happy effect. A drop or two of nitric acid, in a little sweetened water, also forms an excellent remedy in such cases. Dr. Dewees, says that he has rarely failed procuring relief, in this condition of the stomach, "by the occasional exhibition of small quantities of lemonade." I have used a mixture of the *spiritus mendiriri* and lemon syrup, in several instances, with prompt and complete success. Three ounces of the former, with an ounce of the latter, forms a good mixture for this purpose. A teaspoonful of this may be given every half hour, or at remoter intervals according to the urgency of the case.

When the vomiting is excited by the presence of improper articles of nourishment in the stomach, the exhibition of a mild emetic will often prove decidedly beneficial. Four or five grains of ipecacuanna, may be given without the least risk of injury, and generally with much advantage. I have always preferred this article, to antimonial wine, in the gastric affections of infants when a remedy of this kind was deemed proper. It is much less apt to irritate the mucous membrane of the alimentary canal and to debilitate the system than antimony; and its secondary effects are, in general, much more salutary, in cases attended with an irritable condition of the stomach, than those of the latter article. We may, however, frequently procure the entire evacuation of the offensive substances lodged in the stomach, in cases of this kind, simply by the exhibition of warm water, by which the vomiting is, at first, promoted, and the stomach freed of its offensive contents. If, after this has been effected, the vomiting does not cease, a few drops of laudanum or of camphorated spirit, given in a little milk, will generally prevent its recurrence.

We, however, often meet with cases of vomiting in infants, which are neither excited by an excess of acid, nor by improper articles of food nor by any other offensive substances lodged in the stomach, and for which, in fact, we can assign no other cause than that the stomach has, from some circumstance or other, become extremely irritable. In cases of this kind—that is, when the stomach is morbidly irritable and the matter thrown up, contains little or no acid, we may sometimes do much good by the administration of minute doses of calomel and ipecacuanna. I have repeatedly succeeded in arresting vomiting, from inordinate gastric irritability in infants, by exhibiting the eighth of a grain of calomel with the one sixth of a grain of ipecacuanna every hour or two, in conjunction with the application of a stimulating poultice or plaster over the epigastrium. The application of a poultice of this kind, is calculated to operate beneficially, whatever may be the cause of the vomiting. A teaspoonful of pulverized cloves, with the same quantity of black-pepper, formed into a poultice with crumbs of bread and water, will, in general, answer this purpose very well. A handful of dried mint, rubbed up and made into a poultice with meal or bread, forms, also, an excellent stimulating application in this condition of the stomach. With the exception of small doses of laudanum, internal stimulating remedies seldom procure more than very transient relief, and may readily occasion a great deal of mischief, where there is much irritability of the stomach. The occasional use of laxative enemata, will sometimes assist materially in such cases. When opiates are deemed proper, no preparation, I am inclined to think, is more suitable, in this state of the stomach, than the common paragoric tincture of the shops. All the purposes however, that opium is capable of fulfilling may be fully obtained by applying it externally. One or two grains of morphia sprinkled on the surface of a small plaster of common cerate, and laid over the pit of the stomach, will procure a sufficient degree of narcotic influence. When the skin is broken, this article will operate as promptly, and with nearly the same degree of energy as if it had been received into the stomach.

CHAPTER XX.

OF DIARRHŒA.

ALTHOUGH by no means peculiar to infancy, diarrhœa is, unquestionably, by far more common during this early age, than at any other period of life. From the peculiarly susceptible and uninured state of the alimentary canal, and the general organic feebleness of infancy, it is, also, in general, much more apt to assume an unmanageable and dangerous character, at this period, than at a more advanced stage of childhood or adult age. In some instances, the diarrhœal discharge sare fæculent, and easily managed. In others, the stools consist principally of viscid mucus, streaked, occasionally, with a little blood. Sometimes the evacuations are conspicuously bilious. In other cases, the discharges present a white or milky appearance, accompanied with rapid emaciation and prostration; and in some instances they consist of a mixture of fæculent matter, mucus and imperfectly digested articles of food. Although *irritation* of the mucous membrane of the bowels, constitutes the immediate cause of the increased peristaltic action and consequent inordinate discharges, yet each of these modifications in the character and appearance of the evacuations, is essentially connected with peculiar pathological conditions, which it is of great practical importance to discriminate. It should be observed, however, that the simplest or fæculent variety of the disease, may, under improper management or the continued operation of irritating causes pass into any of the other modifications—there being no essential difference between them, except what arises from the degree of inflammatory irritation—the portion of the bowels principally affected, and the extent to which the digestive powers, as well as the neighboring structures and organs become implicated in the disease. Thus, if there is simple irritation of the alimentary canal without much impairment of the digestive functions, the stools will be fæculent. If the *inflammatory* irritation is seated principally in the small intestines, and extends itself to the mesenteric glands, the discharges will probably be chylous. Should the irritation be severe, and chiefly located in the large intestines, the stools will be mucous: If the liver becomes unusually excited, bile will manifest itself in the evacuations; and when the stomach becomes very irritable and the digestive functions depressed portions of imperfectly digested food will pass off with the stools.

The exciting causes of diarrhœa are extremely various. Some of them act directly on the mucous membrane of the intestinal canal, whilst others affect the bowels, sympathetically, through the medium of the general nervous system. Of the former variety are all irritating substances received into, or generated in the alimentary canal; and of these, by far the most common are: irritating, crude, or inappropriate articles of food and drink; acrid and vitiated secretions from the liver and intestinal exhalents; worms, acid, fresh fruit,—particularly such as are very sweet &c. The foundation of diarrhœa, in infants, is often laid during the first twenty-four hours after birth. The habit of gorging the infant's stomach with alimentary fluids, previous to the secretion of its natural and congenial nourishment by the maternal breasts, often at once, produces a degree of gastric irritation and feebleness, which predisposes to the occurrence of diarrhœa, colic &c. from the slightest causes. Children who are entirely nourished at the breast, are much less apt to become affected with this complaint, than such as are partly nourished by artificial food. There exists, however, great diversity in relation to the effects of the same article of nourishment, in different individuals. Some infants are invariably purged, when fed with cow's milk, even when considerably diluted with water. In some children the ordinary preparations of arrow-root produce costiveness, whilst we occasionally find this article to give rise to much disturbance in the alimentary canal, and purging. This, however, is but seldom the case, its usual effects being rather of a constipating character. But it is not from the usual farinaceous and mucilagenous articles, that any particular mischief is to be apprehended in this respect. On the contrary, they are generally the most appropriate dietitic means for preventing and counteracting diarrhœal affections. It is only, when given to excess—when the stomach is habitually overloaded with them, that they are apt to give rise to disorder of the bowels. However mild and congenial the nourishment may be, it will be apt to give rise to weakness of the digestive powers, and purging, when taken in excessive quantities. Over distention of the stomach, by the immoderate reception of food, seldom, however, produces any immediate bad effects in this way. It is in general only, by degrees, that the tone of the stomach is thus impaired; and that it gives rise to intestinal irritation and purging. Infants who are fed with *solid* articles of food, seldom escape suffering more or less from diarrhœa. The practice of allowing potatoes, meat, pastry, dried fruit, and other articles of this kind, to infants, is peculiarly calculated to give rise to intestinal irritation, and all its disagreeable and alarming consequences. This injurious practice is seldom confined to the production of simple diarrhœa. It is apt, ultimately, to produce a slow form of inflammation in the mucous membrane of the bowels, terminating often in ulceration or incurable disorganization of this delicate structure. Chronic cases of diarrhœa, attended with general irritation and emaciation, are almost always connected with inflammation and structural lesion of the intestinal mucous membrane; and the majority of such instances are the result of errors in diet—particularly of crude and irritating articles of solid food.

In some instances, the mother's or nurse's milk, disagrees with the infant's stomach, and gives rise to troublesome vomiting, colic and *purging*. This does not always depend on any obvious ill-health, on the part of the mother or nurse. I have recently seen an instance of protracted diarrhœa, in an infant about six months old, which was nourished exclusively at the breast, and the mother appeared, in every respect, perfectly healthy. The breast was withheld, and a mixture of cow's milk and water substituted for its nourishment, which had the effect of immediately putting a stop to the diarrhœal affection. The milk, in cases of this kind, is, doubtless, in most instances faulty; but it is probable that idiosyncracy, on the part of the infant, is sometimes the principal if not the exclusive source of the mischief, independent of any positive bad quality in the milk. When the milk disagrees with the infant's stomach, the usual consequences, in the first place, are vomiting, and acidity. The digestive functions soon become deranged, and the milk passing into the bowels, in an imperfectly digested state, together with the abundant acid usually generated, causes intestinal irritation and diarrhœa—the discharges exhibiting a curdled, stringy, yellow or green appearance. Cases of this kind, are generally attended with occasional paroxysms of severe colic pains; and the eructations and ejections from the stomach have a very acid smell. Irascible and passionate nurses, and such as are under the influence of some depressing mental emotion, are peculiarly apt to furnish milk of a bad and irritating quality, tending to produce diarrhœa, and other forms of intestinal disorder. The nourishment, too, which is taken by the nurse has a decided influence on the qualities of the milk, and consequently on the digestive organs of the nursling. The free use of salted meats by the nurse, has a tendency to render the milk acrid or offensive to the delicate digestive organs of the infant; and I have known very rapid diarrhœa to occur in consequence of a free indulgence in eating fresh fruit, particularly cherries, on the part of the nurse.

The influence of dentition on the alimentary canal is well known. Many infants are almost constantly affected with looseness of the bowels during this important process; and when the diarrhœal discharge is moderate, it may be regarded as decidedly salutary in its tendency, and ought not to be checked. It has been supposed that the immediate cause of the diarrhœa which often attends dentition, consists in an acrid condition of the saliva—in consequence of the irritation in the gums, extending to the salivary glands, and perverting their action. Some degree of gastric irritation may occasionally arise from this cause; but the principal source of the complaint, appears to consist in a peculiarly irritable state of the alimentary canal, caused, by the dental irritation. The whole nervous system often becomes highly irritable during the process of dentition. The brain becomes remarkably excitable, manifesting in many instances, a decided state of erethism, and the whole organization acquires a preternatural susceptibility to the impressions of exciting causes. In this irritable condition of the intestinal canal, therefore, even the ordinary and appropriate kinds of nourishment, may give rise to irritation of the bowels and consequent diarrhœal discharges. The digestive functions may, moreover, suffer derangement from dentition, and favor the production of acid and other causes of intestinal irritation.

Cold, by suddenly checking the perspiration and determining the blood to the internal organs, frequently gives rise to bowel complaints in infants. Cold-bathing, or washing; suffering wet diapers, stockings, &c. to remain too long on the infant; setting or lying down on damp grass-plats, floors, steps, &c., passing suddenly from a close and warm room into the cold external air; and exposure to cold and humid weather without sufficient clothing—particularly about the abdomen—these are the ordinary ways in which diarrhœa, from the influence of cold, is produced in infants. Cases arising from this cause, are generally attended with slight catarrhal symptoms, more especially with cough; and some degree of febrile irritation almost invariably occurs. There is in general, a greater tendency to inflammation of the mucous membrane of the bowels, in cases of this kind, than in those produced by the other causes of the disease mentioned above. The skin is usually dry and harsh, and the discharges are commonly very liquid or watery, containing flocculi of mucus, with little or no bilious matter or acid.

Atmospheric Heat, also, is frequently concerned in the production of this complaint. Its tendency to excite and derange the functions of the liver is well known. The occurrence of bowel complaints among children, is incomparably more frequent during the hot months of summer, than in the colder seasons of the year. It is probable that the agency of solar heat in the production of bowel complaints, depends as much on the miasmatic exhalations which it generates, as on its own direct operation on the animal system. It is certain that complaints of this kind, are vastly more common in situations favorable for the development of miasmata than in localities not abounding in materials fitted for its generation. There can be no doubt, however, that high atmospheric temperature, by its direct influence on the system, is capable of giving rise to diarrhœal affections. There appears to subsist a direct relation between the liver and the skin; so that when the cutaneous exhalents are kept in a state of unusual action by the influence of atmospheric heat, the liver, acquires a corresponding degree of activity, giving rise to a copious secretion of bile. Hence bilious diarrhœa is most frequently met with during warm weather. In many cases of diarrhœa from this cause, however, there is but very little or no bile perceptibl in the evacuations. The liver, in such cases, is torpid and engorged with blood. This may arise from the alternate influence of high and low temperature. When the skin and liver are in a state of activity from atmospheric heat, the system is extremely susceptible to the impressions of low temperature. If an individual in this situation is exposed to the influence of cold or even cool air—as the cool night air after a warm day, the cutaneous exhalents and liver are suddenly rendered torpid. The blood, passes from the external to the internal organs, and the liver becomes at once greatly congested and torpid—a condition which is always attended with great irritability of the stomach and bowels. Cases resulting from these influences, seldom assume the character of simple diarrhœa. They generally occur in the forms of cholera or dysentery.

Fæculent Diarrhœa.—This is the simplest and in general the most manageable variety of diarrhœa. The evacuations are fæculent, resembling those which are produced by the operation of an active cathartic. The pathological condition of the bowels, in this modification of the complaint appears to consist in simple irritation, depending either on the presence of acrid and offensive substances lodged in the alimentary canal, or on increased irritability, in consequence of which the ordinary contents of the bowels excites excessive peristaltic action and con sequent diarrhœa. When the diarrhœa, depends on the presence of acrid or offensive substances in the intestines, it frequently cures itself; for as soon as the irritating materials are evacuated, the inordinate action of the bowels, usually ceases, and the discharges assume their natural and healthy character. Perhaps the majority of instances of diarrhœa, are, in the first place, excited in this way:—that is, by irritating substances either introduced into the stomach from without, or generated in the intestinal canal, by fermentation, decomposition, and morbid secretions. Very frequently, however, cases, that commence in this way—the diarrhœa being at first similar to the purging excited by cathartics,—are soon associated with a morbidly irritable condition of the bowels; and when this occurs, a spontaneous cure can no longer be expected, since the mildest substances will cause irritation and inordinate peristaltic action. When the diarrhœal discharges continue for three or four days,—more especially after the operation of an efficient laxative, we may presume that the complaint no longer depends, mainly on the presence of acrid or irritating substances, but on a morbid change in the sensibility and irritabiltiy of the bowels. Cases of this kind, sometimes assume a very severe and intractable character, in consequence of the supervention of inflammatory irritation or of sub-acute inflammation in the intestinal mucous membrane. These cases are, however, rarely attended with fæculent discharges properly so called, and must be ranked with one of the subsequent varieties of the complaint.

The most common source of simple fæculent diarrhœa consists probably, in dietetic errors. When the stomach is overloaded with nourishment, or when the articles of food are crude, insoluble and of difficult digestion, more or less disorder of the alimentary canal is inevitable. If, after an error of this kind, the food is not soon rejected by the stomach, portions of it will pass into the bowels in an imperfectly digested state, and give rise either to severe colic, or to rapid and painful diarrhœa. If the error be not repeated, and a moderate and appropriate diet used, cases of this kind sometimes cease as soon as the offensive materials are evacuated. In general, however, the digestive powers, suffer more or less impairment from the irritating impressions and resist ance of the improper food; so that even the mildest and most congenial articles of nourishment may afterwards fail to be properly digested. When this happens, gastric disturbances and diarrhœa, of a protracted and obstinate character often occur, which can seldom be entirely removed without especial attention to the digestive organs. The diarrhœa which results from a bad or unwholesome condition of the mother's or nurse's milk, is always in the beginning fæculent, and generally remains so throughout its course—that is the digestive functions are impaired and the bowels in a state of simple irritation.

In some instances of fæculent diarrhœa, the exciting cause consists in a superabundance, or in a depraved condition of the biliary secretion. In cases of this kind, the evacuations are conspicuously mixed with bilious matter, sometimes of a dark, but more frequetly of a light green color. The appetite is often strong, but the digestive powers are almost always impaired.

Sickness of the stomach, and vomiting, occur much more frequently in this variety of diarrhœa, than in any other modifications of the complaint. This is more particularly the case, when the diarrhœa is excited by bad milk, or irritating and inappropriate articles of food. Nausea usually supervenes a short time after taking nourishment. This is soon followed by pain in the bowels, and more or less rapid purging. When the nausea is frequent and considerable, or when vomiting occurs often, we may presume, that the morbid state of the stomach manifested by these symptoms, constitutes the main pathological condition of the disease, and that it requires very especial attention in its remedial management. This disordered state of the stomach, appears to consist of simple irritation and weakness of its digestive energies, without any fixed inflammatory irritation or phlogosis.

Diarrhœa from the application of cold to the body is not often of the simple fæculent variety. If, in the beginning of the complaint, the discharges are fæculent, which may frequently be the case, they seldom continue to exhibit this character throughout, more especially when its course is protracted, and other sources of gastric derangement are present. The tendency to high inflammatory irritation in the mucous membrane of the stomach and bowels in cases excited by cold, is in general very considerable, and many instances of this kind, accordingly, early assume a much more violent character—the discharges becoming watery with floculi of mucus—or mucous with streaks of blood, attended with febrile symptoms, and a constant tenderness or soreness of the abdomen.

The occurrence of simple fæculent diarrhœa from dentition is very common. When the complaint arises from this cause the discharges are sometimes mixed with an abundance of green bile, more commonly however there is but very little or no bile, in a separate state perceptible in the evacuations. The stomach also usually considerably disordered, and the child generally manifests a fretful and irritable temper. In some cases the diarrhœal discharges alternate with short periods of costiveness, and these intervals of intestinal torpor are almost invariably attended with increased symptoms of general irritation.

Treatment.—It has already been stated that fæculent diarrhœa from crude or irritating substances taken into the stomach sometimes terminates spontaneously as soon as the offensive materials are evacuated by the purging which they excite. It would not, however, be prudent to rely long on a spontaneous cessation; for the irritating cause may be retained many days, notwithstanding the occurrence of frequent copious and forcible diarrhœal discharges, and ultimately give rise to inflammatory irritation in the mucous membrane of the bowels. It is, therefore, always the safest plan, in cases of this kind, to secure an early and entire expulsion of the irritating contents of the bowels, by suitable purgatives. Magnesia is the most appropriate article for this purpose where there are indications of acidity in the primæ viæ. In cases unattended with acid in the stomach, castor oil, rhubarb with or without small portions of calomel, and in very young infants, syrup of rhubarb, are, perhaps, the most suitable purgatives. After the purge has operated, the excitement of the bowels ought to be allayed by an opiate. The last time, in general, for exhibiting the opiate is in the evening. From one to three grains of Dover's powder, according to the age of the child, or a few drops of laudanum, should be used for this purpose. A suitable dose of Dover's powder in union with a small portion of calomel, forms a peculiarly useful anodyne in cases of this kind. If the last discharges brought away by the purge exhibit an unnatural appearance, or if there is reason to think that the bowels have not been entirely freed of their irritating contents, the purgative ought to be repeated, and again followed by an opiate. The nourishment should be simple and bland, and taken in moderate quantities. Arrow root, barley water, oat meal gruel, sago, boiled milk, rice, &c. constitute the most appropriate articles of diet. Particular care should be taken that the stomach be not overloaded with food. The blandest nourishment will be apt to keep up the complaint, if more of it be taken at a time, than can be easily digested. The portion that remains imperfectly digested, becomes a source of irritation to the bowels, and keeps up the disease.

When in recent cases arising from errors in diet or irritating ingesta, considerable nausea or ineffectual efforts to throw off the contents of the stomach occur, much benefit may sometimes be derived from the operation of an emetic. Dr. Dewees recommends full doses of calomel, as "the best possible" means for relieving the stomach in cases of this kind. It rarely fails to produce pretty active vomiting, and operates also as a purge. I have generally preferred the use of ipecacuanna, where an emetic was indicated, both on account of its mild operation, and its tendency, in minute doses, to allay intestinal irritation. After the stomach has been well evacuated by the ipecacuanna, a small dose of calomel, followed in the course of three or four hours by a suitable portion of castor oil, should be given to remove the irritating contents of the bowels.

Recent cases of fæculent diarrhœa, excited by improper ingesta or errors in diet, generally yield readily as soon as the offensive materials are evacuated and the bowels tranquillized by an opiate. Sometimes, however, the cause that has excited the disease, produces, at once, a considerable degree of irritation in the mucous membrane of the bowels, in consequence of which the diarrhœal discharges continue after the original cause of the complaint has been removed. When this happens, and the disease continues, purgatives are no longer adequate to arrest the progress of the bowel affection. Indeed, it is of great importance to bear in mind, that harsh and frequent purging may do a great deal of injury by increasing the mucous irritation, and converting it into actual inflammation. Simple diarrhœa, is frequently converted into an aggravated form of the disease, by the injudicious practice of exhibiting active purgative remedies, after the bowels have been once or twice freely evacuated in the beginning of the complaint. It is seldom necessary or proper to employ more than two or three active purges in cases of fæculent diarrhœa, from transient or temporary exciting causes. To obviate the retention and injurious impressions of vitiated secretions, in cases of this kind minute portions of calomel and ipecacuanna in union, followed by a moderate dose of castor oil generally answers very well. A half a grain of calomel with the same quantity of ipecacuanna, for a child of from one to two years old, seldom fails to produce a sufficient laxative effect. Should it fail, however, its operation may be promoted by the administration of a moderate dose of castor oil. When fæculent diarrhœa assumes a protracted and obstinate character, without any decided indications of inflammatory irritation in the mucous membrane of the bowels, the regular employment of small doses of Dover's powder, in union with prepared chalk, and minute portions of calomel, together with a strict attention to the diet, often produces an excellent effect. A powder composed, a grain of Dover's powder, one sixth of a grain of calomel, and five grains of prepared chalk may be given two, three, or four times daily, according to the age of the patient and violence of the complaint. Vegetable astringents, also, often do much good in protracted cases of simple diarrhœa, provided the mucous membrane of the bowels be free from inflammatory irritation and the irritating contents of the alimentary canal have been properly evacuated by purgatives. They are by no means suitable, however, in cases associated with an inflammatory state of the bowels, or with an irritable and febrile condition of the general system. When the diarrhœal discharges are fæculent and very liquid, and unaccompanied by griping and tenderness of the abdomen, remedies of this kind often operate very beneficially. A decoction of blackberry root, or the root of geranium maculatum, in milk has more frequently succeeded in my hands, than any other article of this kind. The geranium root especially, is an agreeable and efficient astringent, and may be freely employ ed with but very little or no risk of unpleasant irritation. An ounce of the dry root should be boiled in a pint of fresh milk, until one half is evaporated. From a teaspoonful to a tablespoonful of this decoction should be given four or five times daily according to the age of the patient. I consider this astringent decidedly preferable to the gum kino, so frequently employed for this purpose. Kino is more apt to derange the digestive organs and to occasion irritation in the mucous membrane of the bowels than the geranium. The effects of the latter, too, in arresting the inordinate action of the bowels, are much more mild, gradual and permanent than those of the latter, which though sometimes very prompt, are often transient, the complaint recurring after a temporary suspension. It may be again observed, however, that astringents as a general rule, are decidedly improper, in diarrhœa, connected with high irritation, inflammation, or structural lesion of the intestinal mucous membrane.

Cretaceous preparations were formerly almost indiscriminately used in the bowel complaints of children. When the complaint arises from acidity in the primæ viæ, and when there are no indications of inflammatory irritation of the bowels present, cretaceous remedies sometimes produce very excellent effects. They are not proper, however, in cases of an opposite character—that is where the discharges are mixed with masses or flocculi of mucus, and accompanied with much tormina and soreness of the abdomen. In the ordinary bowel complaints of infants, during the summer months, there is usually a very considerable tendency to inflammation or high vascular irritation of the mucous membrane of the intestinal canal, and hence cretraceous remedies often lead to very unfavorable consequences in these cases.

When fæculent diarrhœa arises from cold, it is almost invariably accompanied with more or less conspicuous symptoms of febrile irritation. The skin is usually dry and hot, and the patient fretful and irritable. In some instances of this kind, the evacuations are watery, and copious, and passed off with little or no griping. More frequently, however, there is a considerable portion of mucus mixed with the fæces, and the patient experiences severe tormina. In such cases it will be useful to promote the expulsion of the acrid secretions from the bowels, by one or two mild laxatives; but repeated and active purging, is calculated to do much mischief, by increasing the centripetal determination of the circulation, and favoring the occurrence of inflammation in the mucous membrane of the bowels. After the contents of the bowels have been freely evacuated by a dose of castor oil, small doses of Dover's powder and calomel generally prove highly beneficial in these cases. One grain of the former with half a grain of the latter may be given, twice, thrice, or four times daily, according to the age of the patient and the urgency of the complaint. The abdomen should be enveloped with flannel, and the feet kept warm and dry. The warm-bath may also be used with considerable advantage in such cases,—particularly when the skin is dry and harsh. Astringents and absorbents are entirely inappropriate in cases of this kind.

In diarrhœa, depending on dentition, it is necessary to proceed with much caution in the employment of remedies calculated to arrest its progress. Moderate diarrhœa, often exerts a very salutary effect during dentition. It tends to counteract the preternatural determination of blood to the head, and to diminish the cerebral irritation which is apt to occur in difficult dentition. Children who are affected with diarrhœa while cutting teeth, are much less apt to become affected with convulsions and diseases of the brain, than those whose bowels are habitually torpid during this important process. If the complaint is moderate, no attempts ought to be made to arrest its course by internal remedies. It will tend, in some degree, to protect the brain from injurious irritation, and to keep down the general irritable and febrile condition of the system. If the gums are swollen, they ought to be divided with a lancet down to the advancing teeth, and particular care should be taken that the nourishment be simple, and unirritating. It is, indeed, of the utmost consequence in cases of this kind, to avoid every thing, in the way of diet, that is calculated to increase the intestinal irritation. If the patient is permitted to use crude or inappropriate articles of food, it will scarcely be possible to prevent the complaint from assuming a very aggravated and unmanageable character. Diarrhœa from dentition, depends, mainly on a morbidly irritable condition of the bowels. If the ingesta are bland and adapted to the digestive powers of the child, the complaint may go on moderately, and with a salutary tendency, until the teeth are protruded. A single error in diet, however, may give rise to a state of inflammatory irritation in the bowels, which it will be extremely difficult to remove, so long as the system is under the influence of dentition. When diarrhœa from teething acquires a violent character, advantage may be derived from an occasional dose of castor oil, opiates, ipecacuanna and warm-bathing. There is no variety of diarrhœa in which opiates operate more favorably than in cases arising from dentition. The Dover powder, from its decided diaphoretic tendency, is, in general, the best form for using opiates in complaints of this kind. I have hitherto, generally, depended chiefly on the use of this article, for moderating severe cases of diarrhœa, during difficult dentition. It should be given in very small doses, at sufficient intervals to prevent nausea or vomiting. Ipecacuanna, also, is an excellent remedy in cases of this kind. When administered in doses of a sixth or a fourth of a grain, it often exerts a very tranquillizing influence on the bowels. The dose should be repeated every two or three hours. When the evacuations manifest a deficiency of bile, small portions of calomel should be united with the Dover's powders. Care must, however, be taken not to carry the use of calomel to the extent of affecting the gums, or producing a general mercurial excitement. Astringents are wholly inadmissible in these cases.

Bilious Diarrhœa.—This variety of the complaint is attended with inordinate functional activity of the biliary organs. The secretion of bile is excessive in quantity, and doubtless, also, frequently vitiated in its composition. The evacuations are very fluid, copious, and mixed with a great abundance of green or yellow bilious matter. The urine is generally conspicuously imbued with bile, and when the complaint goes on for two or three days, the skin and white of the eyes, usually acquire a yellowish or slightly jaundiced hue. Cases of this kind seldom occur during the cold seasons of the year. High atmospheric temperature appears to be the ordinary remote cause of this modification of diarrhœa. It is not improbable, however, that what is usually ascribed to the direct influence of solar heat on the animal system, in the production of this and other forms of bilious disease, may depend, mainly on the influence of the miasmata which are always more or less abundantly diffused throughout the atmosphere during hot seasons, and which are well known to exert a direct and powerful influence on the biliary organs. Bilious diarrhœa is much more common in situations abounding in materials adapted for the generation of malaria, than in localities of an opposite character. In populous cities and in marshy districts, this complaint is very common during the hot months of the year; whereas in dry, open and elevated situations, it is but very rarely met with.

In some instances, the bile, though extremely copious, exhibits a perfectly natural or healthy character; in other cases, it presents an unnatural appearance, and is so acrid, as to cause a severe burning sensation in the extremity of the rectum, and sometimes very painful irritation about the anus. Cases of the former kind are usually easily managed; but the latter, are apt to assume a violent and obstinate character, in consequence of the early supervention of inflammatory irritation in the mucous membrane of the intestinal canal. Cases sometimes occur in which the evacuations are at first highly bilious. After having continued for some days, the appearance of bile, in the discharges ceases, and the evacuations become watery, without the slightest trace of bilious matter. When this change takes place, the stomach, usually, becomes irritable, and the disease assumes the character of chronic cholera. The liver in cases of this kind, appears to be torpid, from great sanguineous engorgement.

Diarrhœa of a highly bilious character, is sometimes produced by improper nourishment, or by bad milk. These cases are most apt to occur during the first two or three months of infancy, and are generally associated with much acidity in the primæ viæ. When the disease is excited in this way, the discharges are generally of a bright-green color, and attended with severe griping.

Treatment.—In the treatment of this modification of diarrhœa, the indications, are, to remove the acrid secretions out of the bowels, to subdue the morbid irritability of the intestinal canal, and to correct the functional derangement of the biliary organs. The bowels should, in the first place, be thoroughly evacuated by a suitable dose of castor oil. After this has been effected, minute portions of calomel and ipecacuanna must be given, in repeated doses during the day, and an opiate in the evening. The fourth of a grain of calomel with the same quantity of ipecacuanna may be given every two or three hours, to a child under three years old, and continued until the character of the evacuations is improved. Minute portions of calomel are, in general, more beneficial in diarrhœal affections, associated with an excess of bile, than large and purging doses. When large doses are frequently repeated—more especially in infants—they sometimes give rise to much irritation in the mucous membrane of the alimentary canal; and they are, moreover, less apt to allay the morbid irritability of the bowels than very small doses.

To prevent the retention and accumulation of vitiated or irritating secretions in the bowels, it will be proper to exhibit an occasional dose of castor oil; or an additional portion of calomel may be given, once daily, or every other day, according to the effects of the ordinary doses and the character of the evacuations. Opiates, are in general, much less useful in this variety of diarrhœa than in the preceding one. If the patient is free from fever, advantage may be obtained from a few drops of laudanum, or a moderate dose of Dover's powder administered in the evening, particularly after the operation of a purgative; but opiates ought not to be employed for the purpose of arresting the diarrhœal discharges so long as the evacuations are characterized by a superabundance of bilious matter. Astringents and absorbents are still more objectionable. The principal object to be kept in view, in the treatment of this variety of the complaint, is to correct the functional disorder of the biliary organs; so long as this is not accomplished all attempts to restrain the inordinate action of the bowels, by opiates or astringents, must not only be abortive, but often highly injurious. Should the evacuations assume a natural appearance, and the diarrhœa, notwithstanding continue, it will then be proper, to administer small doses of Dover's powder in union with the calomel, in order to subdue the morbid irritability of the bowels.

In cases attended with febrile irritation, recourse should be had to antimonials. A few drops of antimonial wine, or a teaspoonful of a solution of tart. emetic, of the strength of a grain to two ounces of water, should be given every hour or two. James' powder is an excellent antiphlogistic in cases of this kind. It may be very advantageously given in union with calomel. I have often used the following mixture with very decided benefit in such cases. A teaspoonful of it, should be given every two or three hours.

Spirit Menderiri . .	℥ii.
Spirit Nit. Dulc. . .	ʒii.
Vir. Antimonii . .	ʒi.
Tinct. Opii. . . .	gtt.

Some advantage may also be obtained from warm bathing, and from the free use of mucilaginous diluents, such as barley water, slightly acidulated with lemon juice. When the abdomen becomes tender or sore to pressure, the application of a large emolient poultice over the abdomen, and renewed from time to time, is calculated to do much good. When the abdominal tenderness is attended with very thin discharges—resembling a solution of verdigris in turbid water, containing flakes of intestinal mucous, purgatives must be very cautiously employed. Frequent purging, under such circumstances, could scarcely fail to aggravate the intestinal irritation. The small doses of calomel and ipecacuanna mentioned above, in conjunction with an occasional purgative enema, will, in general, suffice to prevent the undue retention and accumulation of acrid substances in the bowels. Should a purgative be deemed necessary, however, castor oil, with a few drops of laudanum, is decidedly the best article. After the purge has operated, the bowels ought to be tranquillized by an efficient dose of laudanum or Dover's powder.

Mucilaginous diluents may be freely allowed; and in the present variety of the complaint, slightly acidulated drinks, are often peculiarly grateful, and I have never known any ill effects to result from their use. The diet ought to be of the simplest and blandest farinacious substances. Thin preparations of arrow-root, tapioca, sago, rice, barley, and boiled milk, constitute the most suitable nourishment in cases of this kind. Animal fluids—such as beef or chicken tea, are apt to irritate the bowels and to aggravate the diarrhœal affection. After the disease has been subdued, a mixture of equal parts of a thin preparation of arrow-root, and beef or chicken tea, forms a very proper nourishment; bu during the continuance of the bowel complaint the patient ought to be restricted to the exclusive use of the mucilaginous articles just mentioned. The body should be carefully protected against the injurious influence of cold. Cool and damp night air, after a warm day, is particularly apt to excite or aggravate bilious diarrhœa. Children affected with diarrhœa ought not to be washed with cold water. This precaution is particularly proper in very young infants.

Mucous diarrhœa.—In this variety of diarrhœa, the mucous membrane of the bowels is in a much more irritated condition than in the two preceding modifications of the complaint. Ir fæculent and bilious diarrhœa, the irritation is chiefly located in the small intestines; but in the present form, its principal seat is in the colon and rectum. In some instances the evacuations consist almost entirely of intestinal mucus; but in the majority of cases a considerable portion of fæculent matter of an unnatural appearance passes off with the mucus. The mucus is generally the last portion evacuated, and in many instances a small quantity of unmixed mucus precedes the fæculent portion of the discharge. The evacuations are seldom very frequent or copious. They are sometimes streaked with blood, and a slight degree of tenesmus and straining occurs in many cases. The discharges are usually preceded by severe tormina, and in protracted cases, the abdomen becomes decidedly tender or sore to pressure. Mucous diarrhœa, in fact, differs only in degree from dysentery. When neglected or mismanaged it sometimes assumes all the characteristic phenomena of the latter form of intestinal disease. It may be regarded as a catarrhal affection of the bowels, and is produced, generally, as other catarrhal affections are, by cold—causing a sudden torpor of the cutaneous exhalents. In mild cases, the mucus, usually, presents its ordinary natural appearance; but when the disease continues for sometime, and assumes a more severe character, it, generally becomes opake and whitish resembling cream or pus. The appearance of the whitish or puruloid matter in the evacuations, indicates the existence of inflammation in some portion of the mucous membrane of the bowels, and is always to be regarded as a highly unfavorable symptom. Casès of this kind, are generally attended with slight febrile irritation, and the skin is almost invariably dry and harsh.

Treatment.—Dr. Dewees recommends the daily exhibition of a moderate dose of castor oil, and an opiate in the evening until the bowels are relieved. This mode of treatment, will frequently put a speedy stop to the disease; but the *daily* exhibition, of even so mild a purge as castor oil, may do serious injury, by aggravating the mucous irritation of the bowels. I am quite certain that I have seen mild cases pass into severe or purulent ones, under the daily employment of purgatives; and I am equally satisfied that daily purging is, in general, altogether unnecessary to the safe and successful treatment of the complaint. The disease, as has already been stated, is generally brought on by a sudden suppression of the perspiration. An important object, therefore, in its remedial management, is to restore the regular action of the cutaneous exhalents. In the commencement of the treatment, the bowels ought to be freely evacuated, by an efficient dose of castor oil, to which a few drops of laudanum should be added. After the oil has operated, small doses of ipecacuanna and calomel should be given at regular intervals, and a full dose of Dover's powder in the evening. To an infant of between one and two years old, a fourth of a grain of the former with the sixth of a grain of the latter, may be given every two hours.

When the evacuations are attended with severe tormina, and the patient is free from fever, small doses of Dover's powder should be occasionally substituted for the ipecacuanna. To prevent the retention of irritating substances in the bowels, a mild laxative clyster should be administered, once or twice daily. A few drachms of manna dissolved in a gill of warm water,—barley water with a teaspoonful of common salt, or molasses-water, form proper mixtures for this purpose. When the stools are frequent and small, and the patient is observed to remain a long time on the vessel and to strain, mucilaginous injections with a suitable portion of laudanum, generally afford very considerable relief. Should the disease continue for three or four days, a second dose of castor oil and laudanum may be given, if the ipecacuanna and calomel, together with the laxative enemata do not appear to free the bowels sufficiently of their vitiated contents. To promote the action of the cutaneous exhalents, warm bathing, will be useful; and a broad flannel roller should be worn next the skin, round the abdomen. The drink and diet should be mucilaginous. All solid food is decidedly objectionable. When the disease assumes a chronic character, with a puruloid appearance of the mucous discharges, considerable benefit may sometimes be derived from small doses of balsam capaiva, in the form of an emulsion. From five to ten drops of the balsam may be given two or three times daily, together with a few drops of laudanum. I have frequently employed this article in conjunction with minute portions of Dover's powder with the happiest effect in cases of this kind.

Chylous diarrhœa.—In this variety of diarrhœa, the evacuations are of a whitish or milky color with a manifest deficiency of bilious matter. The principal irritation, in cases of this kind, is evidently seated in the upper portion of the small intestines. The mucous membrane of this section of the bowels, appears to be in a sub-inflamed condition; in consequence of which, the sensibility of the mouths of the lacteals is so changed or perverted as to prevent them from taking up the chyle. The tormina or griping is always felt in the upper part of the abdomen; and the epigastrium is almost invariably somewhat distended, and tender to pressure. The hands and feet are apt to be cold; and the skin usually acquires a peculiarly sallow appearance, more especially in cases of protracted duration. The patient is soon much weakened, and emaciation generally goes on very rapidly. Chylous diarrhœa, is seldom attended with distinct febrile symptoms, but the nervous system often becomes morbidly irritable.

This variety of diarrhœa occurs under very different degrees of violence and duration. Recent cases, excited, suddenly, by irritating or improper articles of nourishment or cold, are usually mild and of easy management; but when the complaint comes on slowly, in consequence of long-continued derangement of the digestive organs, or habitual disturbance of the bowels, it frequently assumes a chronic and very obstinate character, so as sometimes to resist remedial effort.

Dr. Dewees, thinks that the absence of bile in the duodenum, constitutes the principal cause of the chylous evacuations. The want of bile, he conceives, will prevent the healthy elaboration of the chyme, in consequence of which it will "act upon the susceptible bowels," as an irritant, and "urge them to an increased peristaltic motion."

It may be observed, however, that the absence of bile in the duodenum generally produces a very different effect, from that which is ascribed to it in this explanation. Torpor of the bowels and constipation are the usual consequences of deficient biliary secretion, and it appears moreover from, the experiments of Tiedeman and Gruelin that the presence of bile is not necessary for healthy elaboration of the chyme. It seems more probable that chylous diarrhœa depends on a highly irritable and irritated condition of the mucous membrane of the small intestines, more especially of the duodenum, in connection with an impaired and imperfect performance of the digestive functions. The absence of bile in the evacuations is, perhaps, occasioned by a spasmodic constriction of the orifice of the bile duct; and the lacteals may fail to take up the chyle from a similar condition of their mouths.

Treatment.—The principal indications are, to allay the irritability and irritation of the duodenum, and to restore the healthy functions of the digestive organs. Purgatives are wholly inadmissible in the treatment of this variety of diarrhœa. Minute doses of calomel and Dover's powder, in conjunction with emolient or stimulating applications to the epigastrium, warm bathing, and proper dietetic regulations, constitute the principal means for combating this affection. The sixth of a grain of calomel, with a fourth of a grain of Dover's powder, should be given every two or three hours, until the evacuations become bilious. A stimulating plaster or a large emolient poultice should be laid over the upper part of the abdomen. A plaster composed of a tablespoonful of powdered cloves, the same quantity of black pepper, a few teaspoonfuls of cayenne, and two tablespoonfuls of flour, mixed up into the consistence of paste with strong vinegar forms an excellent stimulating application for this purpose. A simple emolient poultice, will, in general, do much good, in cases of this kind. In severe and obstinate cases, recourse should be had to the application of a blister over the epigastrium. The plaster should not be left on the skin more than three or four hours. If it is removed, as soon as the skin is slightly inflamed, and an emolient poultice laid over the part, a fine blister will be raised in the course of a few hours, and procure all the advantage that can be obtained from vesication, without subjecting the child to the severe pain which commonly attends the usual mode of blistering.

In a few instances of this modification of diarrhœa, I have obtained much benefit from small doses of the muriated tincture of iron and laudanum. Two drops of the former with a drop of the latter, may be given three or four times daily. A mixture composed of three or four grains of powdered chamomile flowers, a grain of Dover's powder, and a fourth of a grain of calomel, taken three times daily, will, also, sometimes operate very beneficially. Whatever remedies may be employed, a strict attention to proper dietetic regulations is indispensable to success, in treatment of this affection. All solid food must be rigidly forbidden. Nothing but the simplest mucilaginous fluids should be allowed—such as barley water, very thin arrow root, prepared without milk, gum arabic water, a liquid preparation of sago, tapioca, rice water, or a mixture of equal parts of cow's milk and water. It is particularly necessary to avoid taking much food at a time; and the intervals between the meals should be sufficiently long to ensure the entire digestion of the food last taken, before fresh nourishment is received into the stomach.

Lienteric Diarrhœa.—In this variety of diarrhœa, the evacuations, along with more or less vitiated fæculent matter, mucus, occasionally bile, contain articles of food in an imperfectly digested or wholly unchanged condition. At first the discharges do not occur until several hours after eating: but if the disease is suffered to continue, the intervals between the reception of food and its evacuation by the bowels, becomes shorter and shorter, until at last almost every thing that is taken into the stomach is speedily thrown off again by the intestines. Soon after eating, the patient, usually, experiences a good deal of uneasiness in the epigastric and umbilical regions. This is in a short time followed by severe tormina, which in a few moments terminates in a rapid diarrhœal evacuation. In many cases, however, the discharges occur with but very little or no griping whatever. The appetite is always much deranged. In some instances it is weak and capricious, loathing almost every thing, but a few particular, and generally strong, articles of food. In other cases the desire for food is voracious; and the most crude, irritating and high-seasoned articles are those which are often the most desired. In cases of this kind the abdomen is freqcntly very tumid and hard, and the extremities and body emaciated. Moderate pressure on the abdomen seldom occasions any decided manifestation of tenderness or pain; but a sudden concussive agitation of the body, such as coughing or sneezing, or jumping from a chair, &c. almost always gives rise to a feeling of soreness and pain in the epigastric and umbilical regions. In the majority of instances, there is but very little or no bile observable in the evacuations. Occasionally, however, the stools are mixed with a considerable quantity of dark green bilious matter of a glairy consistence, or of a bright green fluid, resembling a solution of verdigris in water.

This form of diarrhœa very seldom, if ever, arises from the operation of a temporary exciting cause. It generally comes on gradually, as a consequence of mismanaged fæculent or bilious diarrhœa, or from the habitual use of irritating articles of food, in conjunction, perhaps, with other causes capable of deranging the digestive organs.

Lienteric diarrhœa may be regarded as a violent form of indigestion accompanied with excessive irritability and subinflammatory irritation of the stomach and small intestines. In chylous diarrhœa, the morbid irritability and irritation is principally located in the small intestines, more especially in the duodenum, without much impairment of the digestive powers; whereas, in the present variety of the complaint, the stomach is manifestly the principal seat of the disease. The mucous membrane of the stomach is probably always in a subinflamed condition in violent cases of lienteric diarrhœa. In some instances, the morbid condition of the mucous membrane, extends throughout nearly the whole tract of the intestinal canal. In cases of this kind, the appetite is often quite voracious, the abdomen is tumid and tense, and the evacuations are generally mixed with an abundance of mucus. These cases are to be regarded as instances of chronic diarrhœa, attended with a morbidly irritable and enfeebled condition of the digestive organs, and are always connected with chronic inflammation, and frequently ulceration of the mucous membrane of the colon. In general, when chronic diarrhœa is the consequence of irritating substances taken into the stomach, and the digestive powers are much disordered, the evacuations, are apt to assume more or less of a lienteric character.

Treatment.—It is obvious, from what has been said in relation to the pathology of this variety of diarrhœa, that the principal objects to be kept in view in its remedial management, are, to subdue the morbid irritability and inflammatory irritation of the stomach and bowels, and to restore the healthy performance of the digestive functions. One of the most important and indispensable means for the fulfilment of these indications, is a perfectly bland, simple, and moderate nourishment. All solid articles of food must be rigidly avoided. If the child is still nursed at the breast, no change of course, is necessary, unless there are good grounds for believing that the milk is depraved. Thin preparations of arrow-root, tapioca, sago, rice, or barley, a mixture of cow's milk and water, a solution of gum arabic in water, &c. constitute the best articles of nourishment in such cases. The drink too ought to be perfectly bland, and cool. Even these bland alimentary substances ought to be used in moderate portions. The patient can derive no support from the reception of more food than the stomach can digest. A small portion only will be digested; the remainder passes in an undigested state into the duodenum, and keeps up the exhausting diarrhœal discharges. Among the internal remedies suitable in cases of this kind, opium, hyoseyamus, muriated tincture of iron, and very finely powdered charcoal, are decidedly the most valuable. In the commencement, two or three drops of the muriated tincture of iron with one or two drops of laudanum may be given once, twice, or three times daily, according to the age of the patient. I have, in several instances of this kind, resorted to the external application of morphia with the happiest effect. The tenth of a grain of this narcotic preparation applied to a part from which the cuticle has been removed by blistering, will procure all the soothing effects of opium, without incurring the risk of nauseating the stomach. Calomel is not, in general, a proper remedy in this form of diarrhœa. When the liver is manifestly torpid, however, minute portions may be given once or twice daily, in union with opium; but I have generally preferred applying a mercurial plaster over the right hypochondrium. Hyoscyamus, in conjunction with small doses of the muriated tincture of iron or of chalybeate wine, sometimes operates very beneficially. Thirty grains of good extract of hyoscyamus may be dissolved in two ounces of water. Of this solution, three or four drops in union with the same quantity of chalybeate wine, or a drop of the muriated tincture, may be given two or three times daily, to a child between one and three years old. After the irritability of the stomach has been, to a considerable degree allayed, small doses of finely prepared charcoal with minute portions of opium, frequently produce very excellent effects in this modification of diarrhœa. In some instances, however, I have found this article to increase the gastric irritation; yet in the majority of cases, in which I have employed it, its effects were unequivocally beneficial. Five grains of the charcoal, with the twentieth of a grain of opium, may be given two or three times daily. In addition to the foregoing means, rubefacient or vesicatory applications, can never be neglected without losing very important remedial resources in cases of this kind.

The abdomen should be rubbed with dry flannel, or with some stimulating liniment, until the skin become red, several times daily. I have known much benefit to result from the application of the spice plaster to the abdomen, already mentioned under the head of chylous diarrhœa. In severe cases, postulation with tartar emetic ointment, or what appears to me better, the application of a blister to the epigastrium, may be resorted to with much propriety. Indeed, I have more frequently made a decided and prompt curative impression on the disease by blistering, than by any other remedy. The plaster need not be sufficient to remain on the skin until the vesication has taken place. When taken off as soon as the skin is uniformly red or inflamed, which usually occurs in three or four hours, and a soft emolient poultice applied over the part, a fine blister will be raised, without subjecting the child to much irritation or pain. The blistered surface will afford an excellent opportunity for the external application of opiates. Gentle exercise, by gestation in the open air, will be a useful auxiliary to the means already mentioned. I have known children, who had been a long time harassed with this form of diarrhœa in the city to recover, speedily on being removed into the country. In general cases of this kind pass off very slowly. When the disease is connected with chronic inflammation of the colon, and the abdomen is tumid, tense and sore to pressure, it often resists every effort to subdue it. I have in one instance of this character, succeeded in curing the disease, by use of the *conferva helminthocordon.* I employed a decoction, made by boiling two drachms of it in a pint of water, down to half a pint. This was administered in teaspoonful doses every four hours, in union with three drops of laudanum. The child was between four and five years old.*

After the lienteric discharges have ceased, and the evacuations present a natural fæculent character, benefit may be derived from small doses of colomba, or powdered chamomile. Nothing of this kind, however, must be used until the discharges are decidedly and wholly fæculent. Great care should be taken that nothing but the simplest and most appropriate diet be allowed for several months, after the patient has recovered from the complaint. Slight errors in diet may re-excite the disease.

CHRONIC DIARRHŒA. *Atrophia Ablactatorum.*—Children are liable to two distinct varieties of chronic diarrhœa. The most common modification of chronic diarrhœa, generally occurs at an early period of childhood, and is manifestly attended with prominent derangement of the liver stomach, and small intestines. The other variety generally occurs at a more advanced age, and corresponds entirely with the chronic diar rhœa of adults, depending mainly on chronic inflammation, of the mucous membrane of the colon. The first of these varieties of the complaint, has been well described by Dr. Cheyne, under the name of "atrophia ablactatorum," as a new and very peculiar form of diarrhœal disease. It differs, certainly very considerably in its phenomena and pathological character, from the chronic diarrhœa of adults; but this difference depends rather on the portion of the alimentary canal principally diseased, than on any essential diversity in their natures, both being nothing more than different modifications of confirmed or chronic states of common diarrhœa. When recent cases of bilious or fæculent diarrhœa are neglected, or mismanaged, or when the exciting cause continues to act, they are apt to assume an aggravated and obstinate character, presenting all the appearances that are described as characterizing the " weaning brash," or atrophia ablactatorum. Dr. Cheyne is of opinion that " this form of chronic diarrhœa is imputable to an increased secretion of acrid bile." The biliary secretion is certainly often very abundant and perhaps depraved in cases of this kind; but this morbid condition of the bile is probably a consequence, rather than the cause of the gastro-intestinal irritation, upon which the diarrhœal affection depends. It seems, to me very clear that the exciting causes of this complaint do not differ from those which give rise to the usual fæculent and bilious varieties of diarrhœa. Gastric irritation from inappropriate articles of nourishment, or other errors in diet, appears to be the ordinary source of this complaint. It may be observed, that inasmuch as this disease is incomparably more common immediately after weaning than at any other period of infancy, there must be something peculiar in its mode of origin and character. It might be expected, however, that a complaint which arises from gastric irritation, produced by inappropriate alimentary ingesta, should be much more common at the time when the child suddenly passes from the bland and congenial nourishment provided for it by nature, to an exclusive and frequently illy adapted artificial diet. Few individuals can sustain a sudden and total change of food, without experiencing more or less disorder of the stomach and bowels. A person who has been a long time confined to animal food, will probably become affected with diarrhœa, if he passes suddenly to an exclusive vegetable diet. The tendency of weaning, to give rise to bowel complaints, is, doubtless, much increased by the influence of dentition on the alimentary canal. This process, is frequently accompanied with so much irritability of the stomach and bowels, that the mildest articles of nourishment are apt to operate as irritants and to excite diarrhœal discharges. It is easily to be conceived, therefore, that diarrhœa must not only be much more frequent, but also more violent and protracted when weaning and dentition co-operate in deranging the alimentary canal than at any other period. Dr. Cheyne says, that, "the disease is most frequent in children who are weaned before the eighth or ninth month;" and this corresponds entirely with my own observations. At this early period, teething is usually going on actively, and the powers of the stomach are in general not yet sufficiently developed, to digest with due facility, the artificial nourishment substituted for the mother's milk. The liability to gastric derangement and diarrhœa from these causes, is much greater when the weaning is abrupt, than when it is accomplished, as it always should be when practicable, in a slow and gradual manner. When the change is suddenly effected, and especially, when the nourishment is unsuitable to the delicate and excitable state of the infant's stomach, it can hardly fail to occasion some degree of gastric derangement. In many instances the stomach gradually accommodates itself to the new kind of nourishment, and all inconveniences which may have resulted from it at first, disappear. When, however, the digestive organs and liver are particularly predisposed to morbid excitement, as they often are during dentition, or when the diet is decidedly improper, weaning is apt to be followed by a high degree of gastrio-intestinal irritation, or violent and obstinate diarrhœa. Thus, the artificial nourishment, at first, deranges the digestive powers; the food remains a long time in the stomach before the process of digestion is completed; acid and other irritating fluids are generated. These together with the imperfectly digested food, irritate the stomach and bowels still more, and excite purging. The irritation is extended to the liver, and a redundant or vitiated secretion of bile takes place. The irritating causes being thus progressively increased, and the original exciting cause, namely the inappropriate nourishment continued, a high state of irritation is established in the mucous membrane of the alimentary canal, with great perversion of the hepatic and intestinal secretions; which, in the majority of instances, finally passes into actual inflammation.

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* I was induced to employ this remedy, by having noticed several obstinate cases of chronic diarrhœa, entirely removed by Swaim's Vermifuge—a nostrum, which I have sufficient grounds for believing, consists principally, of a decoction of the *conferva helminthocordon.*

Dr. Cheyne, in the account he has given of the post-mortem appearances, states that throughout the whole tract of the intestinal canal a number of "singular contractions with one or more intus-susceptions," were noticed in every instance. "The liver was larger than natural, exceedingly firm, and of a bright red colour." The mesenteric glands were inflamed and swollen in some instances; in others they were nearly natural. The intus-susceptions were without inflammation or adhesions. The contractions were "of a spasmodic kind," and could be "permanently dilated again, by pushing the finger into them." "These appearances, he says, lead me to imagine that the weaning brash in its confirmed state is ascribable to an increased secretion of acid bile, or rather to the morbid state of the liver which occasions this."* Dr. Dewees, observes, that the post-mortem appearances detailed by Dr. Cheyne correspond with those made in France by Andral and Cruveilhier. With regard to the dissections of Andral this is not correct. He distinctly mentions softening of the mucous membrane of the small intestines, and other marks of inflammation, as frequently connected with fatal cases of this kind. Since I have directed my attention particularly to the diseases of children, I have had an opportunity of dissecting but one single subject of this kind. In this case the mucous membrane of the pyloric extremity of the stomach and duodenum was in a highly injected condition; in the lower part of the ilium, there were a number of livid patches of irregular shape, in this tissue, and the whole length of the colon was contracted to a size that scarcely admitted my little finger. It can hardly be supposed, indeed, that the acrid and irritating substances which are continually in contact with this delicate structure in cases of this kind, could fail to excite some degree of inflammation in it. During the early stage of the disease the mucous membrane of the small intestines is probably only in a highly irritable and irritated condition. As the disease advances the biliary and intestinal secretions become more and more depraved, and the alimentary canal more irritable. The constant operation of these irritating causes, ultimately gives rise to more or less of inflammation, the irritation is extended to the liver and mesenteric glands, and these undergo morbid changes, and increase the severity and obstinacy of the disease. This complaint occurs most frequently, during the summer and autumnal months. Dr. Cheyne says, that he "has seldom, comparatively speaking, seen it commence before the solstice, nor after the end of the year." The tendency of warm and humid weather to favor the occurrence of bowel complaints in children, is well known. Solar heat renders the organism irritable, and, both through the agency of the miasmata which it engenders, and by its own direct influence on the human body, has a very decided tendency to excite and derange the biliary secretion. Children who are weaned during summer, while dentition is going on, are peculiarly liable to diarrhœa of a severe and obstinate character. This complaint generally commences, in the form of simple bilious diarrhœa. The stools at first are fæculent liquid and mixed with an abundance of bilious matter of a light green color. In the course of four or five days, if it is not counteracted by suitable remedies, sickness of the stomach, and occasionally bilious vomiting occur; and the purging becomes more frequent and often extremely painful. The patient now begins to lose his appetite; more or less febrile irritation ensues, attended with great fretfulness, restlessness, a warm and obstinately dry skin, and urgent thirst. The diarrhœal discharges gradually become more watery, griping and frequent; and the bilious matter, in general, less copious than at first. The body wastes, the flesh becomes soft and flabby, and the debility increases rapidly. In the course of three or four weeks, the fever assumes a regular form,— that is, slight exacerbations occur regularly once or twice daily, attended with a "hectic blush on one cheek," and a very frequent quick and corded pulse. "But the most characteristic symptom of this disease is a constant peevishness, the effect of unceasing griping pain—expressed by the whine of the child, but especially by the settled discontent of the features."

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* Cheyne, On Atrophia Ablactatorum &c. p. 16.

The evacuations are by no means uniform in appearance throughout the course of the disease. At first the stools usually consist of a yellowish fæculent matter mixed with green bile of a glairy or uniform consistence. As the disease advances, and the intestinal irritation increases, the bile generally becomes more abundant and unnatural, presenting a curdled and dark-green appearance mixed with fœtid watery discharges. Sometimes the evacuations are dark brown, very fluid, and extremely fœtid, containing flocculi of mucus, and little masses of dark bile. Not unfrequently the discharges are, for a short time, ochrey or claycolored, and then change again to dark and bilious. At an advanced period of the disease, the stools are sometimes mixed with a considerable quantity of a yellowish white, or puruloid matter; and occasionally they assume a lienteric character,—small portions of imperfectly digested food appearing in the evacuations. When the discharges acquire a watery flocculent and very fœtid character; or when they become lienteric, or mixed with puruloid matter, we may conclude that the mucous membrane of some portion of the intestines is in an inflamed condition, and that the disease will probably resist every effort to remove it.

This form of diarrhœa, generally runs a very protracted course. It seldom terminates fatally "before the sixth or seventh week," and in many instances it continues three or four months before death takes place. During the first two or three weeks, its course may often be speedily arrested by judicious management; but when the complaint is mismanaged and suffered to run on for four or five weeks, it frequently resists every remedial effort. When the disease proves fatal at an early period, it is generally from its assuming the form of cholera, or from the supervention of convulsions.

Dr. Cheyne seems to think that dentition has but very little if any agency in the production of this complaint. "The weaning brash," he says, "I have the strongest reason to believe, has no connection with teething farther than they sometimes meet in the same child. I have known this disease, in many instances, where the gums were neither swelled, nor indurated, nor inflamed, and where there was no salivation nor any appearance in the mouth. I have seen it where children were cutting their teeth easily, and where many of them came without difficulty before weaning, still the disease has supervened. But perhaps the strongest argument that can be used would arise from the observation which I have frequently made, that this disease occurs in children of three months; and I have often known it several months before teething came on." There can be no doubt, indeed, that the disease may, and often does, occur wholly independent of dentition; yet that the occurrence of the complaint is much favored by the irritation of dentition appears to me equally unquestionable. Difficult dentition is, in general, attended with obvious derangement of the digestive functions, and its tendency to increase the irritability of the stomach and bowels, cannot, I think, be questioned. It is, at all events, quite certain, that the instances of this disease, in which irritation from teething is manifestly present, are incomparably more frequent, than those in which no signs of dentition are observable. I have known bowel complaints in children before they were weaned, speedily brought to a favorable termination, simply by dividing the inflamed and swollen gums; and when the gums are in this condition from teething, in the present form of diarrhœa, unequivocal benefit is frequently derived from this operation. The observation made by Cheyne, that this complaint sometimes occurs before dentition commences, does not disprove its agency in the production of the complaint, where it does occur; but only shows that the disease may come on without this source of irritation. No one can deny the great share which abrupt weaning has in bringing on this disease; and yet it occasionally occurs before the child is weaned, or many months after the weaning took place. The truth is, this disease does not differ materially, in relation to its exciting causes, from other varieties of diarrhœa. The reason why it is more apt to assume a violent and chronic character, must be sought, as has been already stated above, in the permanency of its exciting causes, rather than in any thing peculiar in their character.

There is another form of chronic diarrhœa which is common to infants and adults, and which differs very considerably from the preceding variety, both in its phenomena and pathological character.

The evacuations in this form of the disease are characterized by an abundance of mucus, which, as the disease advances becomes mixed with a whitish or cream-like matter, sometimes slightly streaked with blood, and occasionally mixed with small portions of imperfectly digested food. Except, in the early stage of the complaint bile rarely forms a conspicuous part of the discharges. In some instances the evacuations are liquid, of a dirty brown color, containing an abundance of mucus in the form of flakes and small masses of purulent matter. Occasionally the fæculent matter mixed with the stools is of a whitish color and of a pap-like consistence. The appetite is generally very variable, and capricious. It is sometimes wholly depressed, though more frequently sufficiently active, and sometimes quite voracious. After the disease is completely developed, slight febrile irritation generally occurs—particularly towards evening and a few hours after eating. The pulse is generally frequent, small, quick, and sharp, and the skin almost uniformly dry and harsh. The abdomen in some cases, becomes tumid and hard, while the body emaciates more or less rapidly. The face acquires a pale, contracted and morose expression, and the temper becomes irritable and fretful. The patient usually experiences very severe colic pains a few hours after eating, more especially when the food consists of solid articles; and, in general, even the mildest nourishment is followed in an hour or two after receiving it into the stomach, by severe tormina, flatulency, and rapid diarrhœal discharges. The abdomen is almost always tender or sore to pressure, and the feet, and sometimes the face, ultimately become somewhat œdematous. The liver is generally inactive, and the small portion of bile that is occasionally discharged, is usually curdled and of a dark green or black color.

This variety of chronic diarrhœa, is seldom met with in children under two years old. It is generally the result of neglected or mismanaged fæculent or bilious diarrhœa. Indeed, any of the modifications of diarrhœa that have been mentioned, in this chapter, may degenerate into the present form of the complaint. It is usually of very protracted duration. It seldom destroys life in children before the third or fourth month; though the chance of a favorable termination, even under the most judicious treatment after the disease has continued to this period, is generally very slender. So long, however, as the evacuations are free from purulent matter, and the febrile irritation has not assumed a hectic character, there is still considerable probability of success from a judicious and persevering course of remedial management. I have seen several cases of recovery after the disease had run on, beyond the sixth month.

In the former variety of chronic diarrhœa, as has already been stated the principal disease is seated in the stomach, small intestines, and liver, and consists more frequently of a high degree of irritability and irritation of these parts, than in actual inflammation; though this latter form of disease is often ultimately superadded. In the present variety of the disease the principal affection is seated in the colon, and consists of chronic inflammation, with or without disorganization or ulceration in the mucous membrane of this portion of the intestinal canal.

On post mortem examination, the mucous membrane of the colon, and ilium present distinct traces of inflammation. We sometimes discover a number of irregular patches of a fungoid appearance and of a dark or livid color, slightly elevated above the surrounding parts. In other instances, small well defined ulcers with elevated margins, or extensive irregular ulcerations with ragged edges are met with. The coats of the intestines, particularly those of the colon, are sometimes thickened at the parts where these ulcers are situated; and in some instances, this thickening is so great as to diminish the area of the intestinal tube very considerably. Instead of ulcers the mucous membrane, occasionally exhibits a great number of small tuberculous elevation. The appearances just mentioned are in general most conspicuous about the lower portion of the colon. The mucous membrane of the small intestines, is usually very much injected, presenting here and there extensive patches of a bright red appearance. The stomach seldom presents any decided traces of disease.

Treatment.—When diarrhœa has once acquired a chronic character, it is always of peculiarly difficult management. In the treatment of this form of diarrhœa, the attention must be directed, not so much to the mere diminution and suspension of the diarrhœal discharges, as to the removal of that fixed morbid condition of the stomach and bowels, upon which the excessive evacuations depend. The excessive irritability, the inflammation, and the functional disorder of the liver and intestinal exhalents are the objects against which our remedial measures must be principally directed. One of the most important requisites, to the successful treatment of chronic diarrhœa, is a total avoidance of every kind of stimulating or solid aliment. In the "weaning brash," this precaution is, perhaps, not so uniformly indispensable as in the ordinary chronic diarrhœa, attended with mucous inflammation and ulceration of the colon. In this latter form of the complaint nothing can be effected without the strictest attention to this point. The nourishment must consist exclusively of thin mucilaginous fluids, such as gum-arabic water, barley water, very thin preparations of arrow-root, tapioca, sago, oatmeal gruel, and rice water. Not a particle of solid food, of any kind, should be allowed; and the patient should guard particularly against overloading his stomach even with the mildest kinds of nourishment. I have often known the best directed course of remedial treatment, frustrated by a neglect of this important point of practice in such cases. Milk seldom answers well in this disease. It is apt to coagulate, and to pass through the bowels in an undigested condition, appearing in the evacuations in the form of small white flakes. This, of course, always increases the intestinal irritation, and aggravates the tormina and frequency of the discharges. Beef or chicken tea and thin broths are, in general, still more objectionable, as they rarely fail to increase the intestinal irritation and rapidity and painfulness of the evacuations. So far as my own observation enables me to form an opinion, I am inclined to think that a very liquid preparation of tapioca, with infusion of slippery-elm bark for drink, forms the most appropriate artificial nourishment in cases of this kind. When the disease arises from weaning, however, nothing can be more appropriate and beneficial, than the milk of a fresh and healthy nurse. Speedy restoration of the child to the breast, will often, of itself put a stop to "weaning brash." Should diarrhœa of an obstinate character occur, while the child is still nourished at the breast, and there is reason to suspect some unwholesome condition of the milk, a fresh nurse should, if practicable, be immediately procured. Even artificial nourishment, such as gum-arabic water, or very thin preparations of tapioca or arrow-root, would under these circumstances be preferable to the continued use of the unwholesome milk, by which the disease was excited. It is well, however, not to be very precipitate in separating the child from the breast in such cases; for, although it may be proper, and perfectly safe, to change the nurse when the quality of the milk is *suspected*, yet we ought to be well assured that this is actually the case, before the breast is entirely withheld, and the patient put on the exclusive use of artificial nourishment. Within the present year I was requested to consult in the case of an infant about nine months old, and not yet weaned. The child had been affected with diarrhœa, for more than four months. A variety of suitable remedies had been perseveringly used, but all to no purpose. We concluded to urge the immediate separation of the child from the breast, and to nourish it, exclusively with gum-arabic water, and thin tapioca. This was done, and under the use of this nourishment and minute doses of calomel and opium, the little patient was, in the course of about two weeks, freed from its dangerous malady. The treatment of chronic diarrhœa in children is often rendered extremely difficult and irksome, by the ignorance and perverse conduct of mothers and nurses. In despite of the most earnest injunctions to withhold every kind of nourishment but the simple mucilaginous fluids just mentioned, the little patient is often clandestinely supplied with what are deemed innocent delicacies, though in reality highly inappropriate and injurious. They cannot conceive that a "little soft cake," or a "bit of tender chicken," or some such article, could possibly do any harm. I have often been foiled in my efforts to cure cases of this kind, by this unwarrantable and pernicious departure from the directions that were given on this point; and the young practitioner ought to bear in mind, that unless this part of his curative plan is rigidly fulfilled, he can expect nothing but disappointment and defeat in his attempts to arrest the progress of the malady.

During the early stage of weaning brash, the liver and alimentary canal appears to be in the same condition as in common bilious diarrhœa. The stools are of a green, somewhat slimy and curdled appearance, accompanied with frequent nausea and occasional vomiting. The principal objects to be kept in view in prescribing for the complaint at this period, are to correct the functional derangement of the liver and to allay the morbid irritability and irritation of the stomach and bowels. In the commencement of the treatment the intestinal canal should be freely evacuated by a moderate dose of calomel followed, in three or four hours, by a full dose of castor oil. After the purge has operated, the alimentary canal ought to be tranquillized by a suitable dose of laudanum or Dover's powder. To correct the morbid condition of the liver, and moderate the excessive irritability of the bowels, recourse must next be had to the regular exhibition of minute portions of calomel and opium. The fourth of a grain of the former with the twentieth of a grain of the latter, may be given three or four times daily, according to the age of the patient and the urgency of the symptoms. After these powders have been used for two or three days, another dose of castor oil with a few drops of laudanum should be administered. The occasional exhibition of a mild laxative is proper and beneficial; but a frequent repetition of active purgatives is calculated to do much injury in cases of this kind; and after the disease has acquired a strictly chronic character, even the mildest purgative remedies must be employed with great caution. The calomel may be continued until the bile becomes less abundant in the evacuations, and assumes a more natural appearance. It is to be observed, however, that in the employment of calomel, particular care is necessary lest it be carried to the extent of producing a decided mercurial action in the system—a result which is apt to give rise to very unpleasant consequences in children while dentition is going on. I have witnessed several very distressing instances of sloughing of the gums and general mercurial erethism, from the protracted use of calomel in chronic bowel complaints of children. When there are symptoms of acidity in the alimentary canal, alkaline and cretaceous remedies should be employed, along with the calomel and opium. From five to ten grains of prepared chalk, in union with half a grain of Dover's powder and a fourth of a grain of calomel, forms an excellent remedy in such cases. The chalk may also be conveniently given in the form of a fluid mixture, thus:

℞	Cret. ppt.	ʒii.
	Sacch. Albi. . . .	ʒi.
	Mucilag. G. Arab. . .	℥ss.
	Tinct. Opii. . . .	gtt. xx.
	Syrup Rhœi. . . .	ʒii.
	Aq. fontanæ . . .	℥ii.

M. f. Of this a teaspoonful should be given every two or three hours.

I have employed a solution of bicarbonate of soda, in a weak infusion of hops, with the happiest effect in this form of diarrhœa, when accompanied with acidity in the primæ viæ. At the same time that these remedies are employed, a stimulating plaster ought to be laid over the epigastrium, or frictions made with rubefacient liniments. A plaster made by melting equal parts of burgundy pitch and common diachylon plaster, spread on a piece of sheep skin, forms an excellent application for this purpose. The spice plaster, mentioned under the head of chylous diarrhœa, may also be used with advantage. Under the employment of these means, in conjunction with the most rigid adherence to a bland mucilaginous diet, this form of diarrhœa may often be subdued without much difficulty, when encountered at an early period, or before inflammation or structural lesion has taken place in the affected parts.

When the disease has acquired a strictly chronic character, and is accompanied with symptoms indicative of inflammation of the mucous membrane of the bowels, the treatment must be, in some degree, varied from that which has just been mentioned as appropriate, while the local affection consists, as yet, of simple irritation and functional derangement. The symptoms which indicate this aggravated state of the disease are; a frequent, quick, and sharp pulse, more especially towards evening, and an hour or two after eating; tenderness of the abdomen to pressure; small evacuations consisting chiefly of mucus, streaked occasionally with blood, and containing, at times, small masses of a cream-like or purulent matter, or very watery discharges, of a reddish color, with a large quantity of flocculent mucus, resembling the washings of flesh; a *red, raw, rough or glassy appearance of the tongue;* urgent thirst; extreme moroseness and fretfulness of temper; rapid emaciation; and occasional circumscribed flush on one cheek; drawing up the legs towards the abdomen when lying down; and a peculiarly contracted and anxious expression of the countenance. When these symptoms are present, there can be no doubt of the existence of chronic inflammation in some portion of the mucous membrane of the bowels; and when the evacuations are very frequent, watery and whitish, and the emaciation is extremely rapid, we may presume that the mesenteric glands, also, are in a state of disease.

In this aggravated state of the disease, local depletion by leeching, and counter irritating applications are among the most useful remedies we possess. If leeches can be procured, two or three should be occasionally applied to the epigastrium, and a large emolient poultice laid over the abdomen after the leeches have been separated. Whether leeching be practised or not, active counter irritation ought never to be neglected in such cases. Very little, will be effected by internal remedies, without the concurrent aid of active irritating applications to the region of the affected organs. Blistering appears to me decidedly the best means of fulfilling this purpose. Pustulation with tartar emetic ointment, is apt to give rise to corroding and extremely painful ulcerations in infants. When the epispastic is properly managed it seldom occasions much suffering; and the derivative tendency of blistering is, probably, greater than that of any other application of this kind. The vesicatory should be removed as soon as the skin is reddened or slightly inflamed, which usually occurs, in about three hours, and a soft emollient poultice laid over the part. In the course of a few hours a fine blister will be raised, which is then to be opened and dressed in the usual manner. I have been in the habit of dressing blisters, in cases of this kind, with weak mercurial ointment, omitting at the same time the internal use of calomel, and, as it appeared to me, often with obvious advantage. Calomel, even in minute doses, if long continued, sometimes produces very unpleasant irritation, when the mucous membrane of the bowels is in a state of chronic inflammation. As the liver, however, is always in a very disordered condition, mercurials are obviously indicated; and hence, the use of mercurial ointment in the way just mentioned, doubtless has a very beneficial tendency in this affection. I have known the continued application of large emolient poultices over the abdomen, without blistering, or any other mode of counter-irritation, to produce excellent effects in cases of this kind. The poultice should be renewed three times daily; and before a fresh one is applied, the skin ought to be washed with warm water, and afterwards rubbed with flannel until it is dry and somewhat reddened. I am persuaded, from what I have witnessed, that a diligent course of management, in this way, is calculated to do a great deal of good—as much, probably, as is usually derived from the more painful counter-irritating applications.

Among the internal remedies, opium, calomel, the sulphate of iron, and the nitrate of silver, appear to me the most valuable in this aggravated state of weaning brash. After the bowels have been gently evacuated by a dose of castor oil with a few drops of laudanum, small doses of calomel and opium should be given three or four times daily, until there is reason to think that the action of the liver has been improved. Much more caution is necessary in the use of calomel in this stage of the disease, than at an early period, before inflammation of the mucous membrane has taken place. When this tissue is in a state of chronic inflammation, calomel not only sometimes increases the local irritation, but is apt, when frequently used, to produce a general erethism of the system, which is always extremely unfavorable in its tendency. Calomel, indeed, can rarely have any direct beneficial operation upon the intestinal canal, when its mucous coat is in a state of chronic inflammation. Its usefulness under these circumstances depends on its well-known tendency to correct the morbid condition of the liver, and consequently to improve the vitiated or acrid biliary secretion. Opium may be very beneficially employed, throughout the whole course of the disease. I have more frequently succeeded in arresting the disease, in this stage, by the internal use of small doses of opium and sulphate of iron, in conjunction with the external means mentioned above, than by any other remedy. After the morbid condition of the liver has been, in some degree, corrected by small doses of calomel and opium, the sulphate of iron may be very advantageously substituted for the calomel. A powder composed of the twentieth of a grain of opium, the eighth of a grain of sulphate of iron, and five or six grains of powdered gum arabic, should be given three or four times daily according to the age of the child. Harsh and inappropriate as the nitrate of silver may appear to be, in cases of this kind, I have, nevertheless, in a few instances, found its internal administration to produce the happiest effect. In an extremely severe case of chronic diarrhœa, which commenced in the usual way of weaning brash, and which was evidently attended with chronic inflammation, and, as it seemed to me, ulceration of the mucous membrane of the colon, I administered this article in union with laudanum, with prompt and decided benefit. One grain of the nitrate was dissolved in an ounce and a half of gum-arabic water, to which twenty drops of laudanum were added. A teaspoonful of this solution was given three times daily. The discharges soon became less frequent and of a better appearance; and under the continued use of this remedy, together with blisters dressed with weak mercurial ointment, and the mildest possible nourishment, the disease gradually yielded, until it was finally entirely subdued. The patient was about eighteen months old. In several other instances of a similar character, this treatment was attended with unequivocal advantages; and I have never known the slightest inconvenience to result from the use of this article in chronic mucous inflammation of the bowels, when administered in a mucilaginous solution and in very small doses. In cases of this kind, the nourishment should consist exclusively of barley-water, a solution of gum arabic, infusion of slippery elm, the mucilage of iceland moss, and a very liquid preparation of arrow-root. The smallest portion of solid food, will generally do more harm, in a few hours, than can be remedied in several weeks. In this advanced stage of the disease, purgatives ought to be employed with the utmost degree of caution. Dr. Dewees advises that " small but *repeated* doses of castor oil should be given." I cannot but regard this advice as decidedly injudicious, and calculated, if followed up, to do much mischief. In ordinary cases of diarrhœa, depending on simple irritation from offensive substances lodged in the bowels, repeated purging is often indispensable. In such cases, the principal objects are—to remove the irritating substances out of the bowels by laxatives, and to allay their inordinate irritability by opiates. In the present form of diarrhœa a very different state of things obtains. The mucous membrane of the bowels is inflamed, and perhaps ulcerated. The diarrhœal discharges depend on this diseased condition of the intestines, rather than on the acrid secretions which are poured into them. It could hardly be expected therefore, that any advantage would result, from frequently irritating the inflamed mucous membrane and urging the already too greatly excited peristaltic action of the bowels, by purgatives. In the chronic diarrhœa of adults, accompanied with mucous inflammation of the colon, no prudent and experienced physician, certainly, would resort to "repeated doses of castor oil." I have repeatedly witnessed the pernicious consequences of this practice in cases of this kind. I do not mean to object to the *occasional* administration of a moderate dose of castor oil with a few drops of laudanum. If the dose be repeated once every three or four days, and laxative enemata employed, during the intermediate periods, the bowels will be kept in sufficient motion to prevent the undue retention and accumulation of acrid secretions in them.

It may be objected to the preceding observations, that if articles so corrosive and active as lunar caustic, and the sulphate of iron, may be given with advantage in this complaint, no harm can be reasonably apprehended, from the mild impressions of castor oil, or other gentle purgatives. This argument, however, is not supported by experience. There is something very peculiar in the impressions made by these articles. The nitrate of silver, especially, though a highly active irritant, often exerts a peculiarly soothing and alterative effect on inflamed surfaces. In certain varieties of ophthalmia, this article is pre-eminently useful; yet were castor oil or rhubarb applied to the eye, the inflammation would, undoubtedly, be greatly increased. It is not the strength but the character of the irritant that renders it either salutary or hurtful in certain affections. Purgatives excite the intestinal nerves and increase the peristaltic action; lunar caustic and the sulphate of iron, not only excite, but *change* the sensibility and irritability of the inflamed mucous membrane of the bowels, and thus contribute essentially to the reduction of the inflammation.

In the chronic diarrhœa of adults, the sulphate of copper, has, within the last four or five years, been employed in Europe with entire success. When the inflammation and ulceration is chiefly, if not wholly, confined to the colon, this article sometimes produces a very good effect. I have used it in a few instances, of this kind, in adults, with unequivocal advantage. It is not improbable that it might be used with equal benefit in the chronic diarrhœa of children—more especially in the second variety mentioned in the former part of this section, and which does not differ, in its pathological character, from the ordinary chronic diarrhœa of adults. This modification of the complaint, as has already been observed, is generally the result of neglected or mismanaged acute diarrhœa, and is seldom met in very young infants. The stools are slimy, usually streaked with blood, often attended, with a slight feeling of tenesmus, or with considerable straining, and almost invariably conspicuously mixed with purulent matter. In such cases, besides the remedies already mentioned as applicable in chronic diarrhœa, the sulphate of copper, may be tried. It should always be given with opium. The one tenth of a grain, with the fifteenth of a grain of opium, may be given every morning, noon, and evening; and the proportion of the sulphate ought to be gradually increased, until it is found to produce nausea or vomiting. The balsam copaiva, too, may sometimes be used with decided benefit in such cases. I have used this article repeatedly in the chronic bowel complaints of children, and occasionally with considerable advantage. It should be given in the form of emulsion and in union with small doses of laudanum. Five or six drops of the balsam, with a drop or two of laudanum should be given three or four times daily. In cases of this kind I have seen much good done by a decoction of the *conferva helminthocordon.* I am satisfied that this is a valuable remedy in certain varieties of protracted diarrhœa. Where there is reason to suspect the presence of verminous irritation, this article is, probably, the most useful remedy we possess. It has, pretty active vermifuge powers, and by the small portion of iodine which it contains, may operate very beneficially on the liver and mesenteric glands. Be this as it may, I have witnessed its good effects in several very long-standing cases, after various other remedies had been used without any manifest advantage. Two drachms of the conferva should be boiled in half a pint of water, down to four ounces. The dose of this is a teaspoonful three or four times daily, and I have usually added about a tenth of a grain of the sulphate of iron to each dose. Diarrhœa, of a very obstinate character, alternating, however, with occasional short periods of costiveness, sometimes arises from the presence of worms in the bowels. These cases are, almost without exception, attended with a tumid and hard state of the abdomen, slimy evacuations, a peculiarly offensive breath, a pale countenance, voracious appetite, and frequently with tumefaction of the upper lip. As instances of this kind are not necessarily, or even generally, connected with mucous inflammation of the bowels, recourse may be had to pink-root tea, or to small and repeated doses of calomel followed by an active purgative. My own experience, however, has led me to prefer a decoction of the helminthocordon, in cases depending, or connected with verminous irritation, to any other remedy I have tried.

Astringent and cretaceous remedies are not, in general, calculated to do good in chronic diarrhœa. When there is mucous inflammation or ulceration present, they seldom fail to do manifest harm. After the local affection has been subdued, and the fæculent and copious diarrhœal discharges result from weakness and relaxation of the bowels, vegetable astringents will sometimes operate very favorably. So long, however, as the evacuations are small, slimy, streaked with blood, or mixed with purulent matter, remedies of this kind are wholly inadmissible. During convalescence, they may sometimes be proper; but very rarely, if ever, during the active stages of the disease. The blackberry root, or the root of geranium maculatum, are among the best, if not the very best astringents we have, for purposes of this kind.

[I have space here, only, for the introduction of the following recipe, which, in my estimation is among the best in use for diarrhœa, with long-continued laxity of the bowels:—

℞. Ext. Rhatan.............	ʒi
Acid nitric...............	♏xxiv
Sacch. alb................	ʒi
Tinct. opii...............	ʒss
Aq. camphor............	℥iv

Mix.

The dose for infants will vary from twenty drops to a teaspoonful, to be repeated as the circumstances may require.]

CHAPTER XXI.

OF INTESTINAL WORMS.

CONCERNING the origin of intestinal worms, much has been conjectured, but little ascertained. It is a subject, by no means unworthy of particular research; for beside the interest it possesses in the eye of the naturalist, it has peculiar claims on the attention of the physician. An exact and complete knowledge of the sources and generation of these animals, might furnish materials for a certain prophylactick mode of treatment. As the inquiry, however, does not come properly within the design of this work, we will not enter into an extensive examination of the various notions, that have been started with respect to the formation of worms, but briefly notice the two hypotheses, which are supported by the greatest number of probabilities.

The first of these is framed in accordance with the ancient dogma, *omnia ex ovo*, and derives its principal evidence from the analogy of nature, and the inadequacy of any other mode for ex plaining the origin of intestinal worms. According to this notion, these animals are evolved from ovula, received into the stomach and bowels from without, along with the food and drink. It may be remarked, that the theory necessarily involves the supposition of the existence without the body of worms, by which these ova are generated, and which are similar to intestinal worms. But the most accurate observation is in contradiction to this supposition. The few earth-worms, resembling tœnia and ascarides, are of very rare occurrence and only to be met with in certain localities; whereas these species of vermin are common both to man and the inferior animals, in all countries and every variety of situation. Linnæus, Gmelin and a few others report, indeed, that they have discovered similar worms in stagnant waters and marshes; but the ablest helminthologists of the present day, assert, that they are quite dissimilar, in structure and habits, to those generated in the intestines of animals. Moreover, intestinal worms, when expelled from the body, and exposed to the air or placed in water, almost immediately die—a circumstance hardly to be looked for, if originally derived from without. Finally, it is ascertained, that earth-worms and such as live in water, do not change their forms or characters, when accidentally received into the alimentary canal. Instances have been mentioned, of various aquatic animals being taken into the stomach, where they have thriven so wonderfully as hardly to be recognized as individuals of the different species to which they naturally belonged. In all these cases, however, the change was in their magnitude, not in their structure and essential nature. These facts go to prove that intestinal worms constitute an entirely distinct species from all others, and it therefore, becomes rather a perplexing task, for the advocates of the ovular theory, to point out the sources whence the verminous ova are derived.

But there are other difficulties in the way of this hypothesis. Cases, on the best authority, are recorded of worms found in the intestines of fœtuses, and of infants newly born. Kerkringius discovered lumbrici in the stomach of a seventh month fœtus: in another instance, he found a great number of small worms in the bowels of a child, just after birth. A tape worm, as Pallas states, was found, by Brendel, in the intestines of a newly-born infant; and according to the testimony of Block, Hains met with a similar instance. Tænia have been discovered in the bowels of a pup, immediately after birth, as in the case stated by Rudolphi to have occurred under the notice of the celebrated Blumenbach. It is also on record, that a fasciola hepatica was detected in a lamb still in utero. The fact, too, that hydatids and other animals are not unfrequently met with in parts of the body, that can have no communication outwardly, discountenances the ovular hypothesis.

A view of these difficulties has contributed to turn the attention of many ingenious men to the doctrine of the spontaneous generation of worms within the body. This doctrine is chiefly sustained by the facts we have just mentioned, as militating against the notion of verminous generation from extrinsic ova.

That the ovula of worms should be transmitted through the medium of the ingesta, Dr. Bremser thinks altogether improbable. An experiment, performed by Schreiber, is also adduced by him in support of the hypothesis of spontaneous formation. A pole-cat was fed for six weeks upon milk, containing the eggs and various species of intestinal worms. The animal being killed at the end of that period, to the astonishment of all, not a single worm could be detected in his body.

The advocates of the ovular theory, in attempting to obviate the difficulties that beset their opinions, and to combat the adverse hypothesis, contend, that there is no improbability in supposing, there may be a transmission of eggs through the medium of air, food and drink. As to Schreiber's experiment, they deem it quite inconclusive. Other circumstances, beside the mere presence of the ova, are necessary to the formation of worms. The intestines must be so debilitated or disordered, that they shall be unable to destroy and cast off these parasitic animals. Now in the experiment related, the stomach of the pole-cat was in its usual healthy condition—at least there is no reason to believe otherwise. It is further remarked, there are positive experiments to prove that worms may be propagated in the human body. Pallas, by a small incision, introduced into the cavity of a dog's abdomen, the ova of tænia, from the bowels of another dog. At the end of a month young tænia were thriving in the cavity. In this case, they were not checked in their developement, by the active powers of the alimentary canal, nor liable to be thrown off by its healthful motions. The case of hydatids and other animals, found in the close cavities of the body, is acknowledged to present considerable difficulties—not so many, however, it is said, as surround the hypothesis of a spontaneous formation. Besides, it is quite possible, they remark, that the eggs from which these verminous animals are generated, after being received into the system, may, from their extreme minuteness, have been taken up and carried away by the absorbents, to the different parts of the body, where they are found in their developement. The same remark is applicable to instances of worms discovered in fœtuses. Owing to the intimate communication established between the mother and the child, in utero, the diseases of the parent not unfrequently become the diseases of her offspring—and peculiarities of physical and moral constitution are also transmitted. Why then, it is asked, may not the ovula of worms, received into the system of the mother, be taken up by the absorbent vessels, and after passing into the circulation, be ultimately deposited in the bowels of the fœtus? The difficulty, growing out of the distinct specific nature of intestinal worms, they attempt to lessen, by supposing, that a change in situation and mode of living may so far alter the external appearance of these worms, as to conceal their real character.

Such are the principal grounds, upon which the two hypotheses stand. I will leave the student to make up his own opinion on the subject, with a single remark in particular reference to the notion of a spontaneous formation. It appears to me that an erroneous sentiment of religion and the force of long-received opinions, —in other words, that partial views of the economy of nature, as also an undue deference to authority,—have exerted too much influence over the enquiries of men, touching this subject. The ancient dogma, omnia ex ovo, unquestionably true in the general, is deemed by some universally so; although it is manifest it should not be extended beyond the experience upon which it is based. If then, certain remarkable phenomena should be observed, by no means in accordance with the general theory, analogy should not be a sufficient reason to make us doubt the evidence of our senses, and believe in opposition to facts, that such exceptions are not real, but apparent.

SPECIES OF INTESTINAL WORMS.—There are five distinct species of intestinal worms.

1. *The tricocephalus dispar*—(*Trichuris*—*tricocephalus hominis*,—*ascaris trichuria*).—This worm, called by the English *the long threadworm*, is from an inch and a half to about two inches in length. About two thirds of its length is as thin as a horse hair, the remaining and posterior part being considerably thicker, terminating in a rounded or blunt extremity. The thin part is transversely striated; and the alimentary canal may be seen, by means of a lens, running from its thinner extremity in a direct line through the centre, into the thick posterior portion, where it

assumes a flat and spiral form. These worms are seldom numerous, and are principally found in the cœcum. They have been discovered in the rectum, and some say they have met with them in the jejunum.

2. *Ascaris vermicularis.*—(*Oxyuris vermicularis—fusaria vermicularis—mane or thread worm*).—This is a very small white worm —the male being not above two lines in length, with a rounded or blunt extremity anteriorly, tapering to a point posteriorly. The female is considerably larger, being from four to five lines in length, terminating in an extremely fine extremity posteriorly, resembling the point of the finest needle. These worms are found only in the large intestines, and principally in the lower part of the rectum, where they are often congregated in almost countless numbers. The reports, that have been made, of their existence at times in the ventricles of the brain may be justly discredited.

3. *Ascaris lumbricoides.*—(*Fusaria lumbricoides—lumbricusteres*). These worms are from two or three to ten or twelve inches in length, round, of a yellowish white or brownish-red color, of nearly a uniform thickness, except at the extremities; which taper to a blunt point. They are from two to three lines in thickness. The head may be distinguished by a circular depression within a line of one of the extremities, terminating in three small tuberosities or valves, which the worm has the power of opening or closing. When they are opened, a very minute patulous projection may be seen, which constitutes the mouth of the worm. A very small groove passes longitudinally from one extremity to the other, on both sides. The alimentary canal terminates in a transverse depression on the under surface, near the posterior extremity. The male is smaller than the female, and may be distinguished by its shortly curved caudal extremity. In some instances the organs of generation are conspicuous—consisting of two small cylindrical projections in the curved part of the tail. These worms inhabit the small intestines, and occasionally ascend into the stomach. It is said, too, that they have been discovered in the gall bladder and common bile duct.

4. *Tænia lata.*—(*Bothrisccphalus latus—tænia membranacea—t. vulgaris*).—This worm often acquires a very great length,—from thirty to forty feet and more. It is from four to ten lines in

breadth, flat, white, and composed of a series of concatenated joints, resembling a piece of white tape. The head is armed with two processes, by which the worm attaches itself to the intestines. It inhabits the upper portion of the bowels and the stomach. Three or four of these worms sometimes exist in the same person. Where they prevail, the tænia solium is seldom met with.

5. *Tænia solium.*—(*Tænia cucurbitini—t. osculis margin-albius.*) This worm is rarely, if ever, voided whole. It is passed off in pieces of a greater or less number of joints, or in single joints, bearing considerable resemblance to the seeds of *gourd.* Pieces, however, upwards of twenty feet in length, have been discharged, although generally not more than three or four joints, pass off together. The anterior part tapers off into a very fine, thread like extremity, the head being extremely small, and furnished at its sides with four small apertures (*oscula*). This is the most common species of tape-worm, and like the tænia lata, inhabits the stomach and small intestines. The name would indicate that one worm alone inhabited the bowels of the same individual; but this is not so, two or three frequently being voided by the same person.

Circumstances, favoring the generation of intestinal worms.—Although unenlightened with regard to the origin of these parasitic animals, observation has revealed to us many of the circumstances, that favor their production and increase. The principal of these are, a general debility of the system, and a feeble or deranged condition of the alimentary canal. Whatever, therefore, disposes to these states, constitutes a remote cause of worms,—such as, too rapid growth; scrofula; a sedentary and an inactive mode of life; habitual exposure to a damp atmosphere; indulgence in crude, unripe fruits; the abundant use of fat, and farinaceous articles of diet, and of fresh milk; the ingestion of more food than the stomach will readily digest, or than is necessary to the wholesome sustenance of the system. Dr. Bremser asserts, that all esculent articles, containing an abundant proportion of nutritive matter, will when taken in quantities more than sufficient to minister to the necessities of life; greatly favor the formation of worms. Sugar by some has been thought to aid largely in the development of these animals; but this has been denied by others who have enjoyed equal opportunities of correct observation.

That verminous diseases have ever prevailed as epidemics, is, by some, denied and not unfrequently ridiculed. Why the statement should have excited ridicule, we are at a loss to discover; since there certainly can be no absurdity in the notion, that peculiar atmospheric conditions may at times prevail throughout large districts of country, affecting the intestinal canal in such a manner, as shall particularly dispose it to favor the generation of worms. Besides, if the concurrent testimony of many very eminent authorities is to be believed, we shall be obliged to admit the actual occurrence of such epidemics. A very remarkable instance of this kind is related by Mariè, which occurred at Ravenna and the surrounding district. Block has also given an account of an epidemic worm-fever.

In some countries, verminous affections prevail far more than in others. In Savoy and Chambray intestinal worms are said to be remarkably common in all classes of society, (Daquin, Bremser,) and the same observation has been repeatedly made of Holland and Switzerland. The prevalence of verminous disease, in the latter country is ascribed by Bremser to the abundant use of milk and cheese. Nevertheless we may be said to be ignorant of the various circumstances that occasion the spread of these diseases in particular districts. Holland, in climate and situation, differs entirely from Switzerland, being low, flat, moist and marshy; and moreover, fish enters largely into the diet of the inhabitants. Still we find the Swiss peasant, living amidst rugged Alps, and "breathing the difficult air of the iced mountain's top," equally liable with the Hollander to verminous complaints. It is thought by some that worms are more prevalent in cities than in the country; and Pallas believes that carnivorous animals are more subject to them than those of the graminivorous sort. Bremser states on the other hand, that it is no unfrequent circumstance to find large numbers of worms in the intestines of those animals, that subsist principally on vegetables. The greater prevalence of verminous affections in cities, is attributed, by him, to the larger proportions of causes, tending to enfeeble or deprave the general system, and derange the digestive functions—such as impure air, deficient exercise, luxurious living and irregular habits. It has already been remarked that an over nutritious diet tends to produce worms, but a deficiency of nutriment would not seem to occasion the same result.

Different districts of country are liable to the prevalence of different species of worms. The occurrence of the tape-worm is particularly common both in Switzerland and Holland; and it is worthy of remark, that, in the former country, the bothriocephalus latus is by far the most frequently met with. In Germany, the greater part of France, in Italy and even in the Tyrol, the tænia solium is almost the only species of tape-worm to be found. In Sweden, according to Rhudolphi, the broad tape-worm occurs but rarely, but the tænia solium is of frequent occurrence. This latter species prevails also most frequently in Great Britain, although the former sort is not seldom met with. (Rhind.) The Guinea worm, infesting the sub-cutaneous cellular tissue, is confined to tropical countries: although brought into the temperate regions, by persons afflicted with it, it has never there become a prevailing affection.

Childhood is the period of life, especially subject to verminous disease. The tape-worm, however, is generally the pest of riper years. As a general rule, those children, who are confined altogether to their mother's milk, suffer least from worms. Dr. Dewees declares, that he has never seen worms in children under ten months of age, and only in two instances of that age, both of whom were weaned at four months.

Symptoms.—The symptoms, arising from verminous irritation, are as numerous and diverse, as the sympathies that subsist between the alimentary-canal and the different parts of the body. It is on account of the variety and complexity of these sympathies, and because we have no certain means of indicating the specific marks of verminous irritation, that the symptomatology of worms is so imperfect. The only sure indication of their existence, is their appearance in the evacuations. Nevertheless, there are many symptoms that will lead the judicious practitioner to suspect their presence and prescribe accordingly. The countenance is pale and leaden-colored, with occasional flushes, or a circumscribed spot of red in one or both cheeks; the eyes become dull; the pupils dilate; an azure semicircle runs along the lower eye-lid; the nose is irritated, swells and sometimes bleeds; there is tumefaction of the upper lip; occasional head-ache, with humming or throbbing in the ears; an unusual secretion of saliva; slimy or furred tongue; breath very foul, particularly in the morning; appetite variable,—sometimes voracious, with a gnawing sensation of the stomach; at others, entirely gone; fleeting pains in the stomach; occasional nausea and vomiting, the matter thrown up, being limpid like water; violent tormina throughout the abdomen, particularly about the umbilical region; bowels irregular—at times costive, and then disposed to frequent dejections; stools slimy, not unfrequently tinged with blood; belly swollen and hard, attended with emaciation of other parts of the body; urine turbid, yellowish or—after depositing a sediment, has the appearance of milk and water, (Rhind); respiration, occasionally difficult and accompanied by hiccough; sometimes cough, dry and convulsive, stertorous or suffocating; uneasy and disturbed sleep, with grinding of the teeth; temper variable, but generally irritable. Of all these, the most infallible symptoms are by some supposed to be, unusual enlargement of the pupil; voracious appetite; inordinate secretion of saliva; emaciation; pricking sensation of the stomach; swelling and hardness of the abdomen, and loathing of food. Nevertheless, all these symptoms may arise from other affections. According to Rosenstein, the surest indication of their presence, is the uncomfortable sensation experienced by the patient after a draught of cold water, and voiding some worms or fragments of worms. There can, of course, be no doubt as to the infallibility of the latter symptom.

It has been fancied by some persons, that worms perform very wholesome offices in the animal economy, consuming the superabundant nutriment, destroying morbid secretions, and stimulating the intestines to the expulsion of ungenial substances. But daily experience and correct observation teach, that these are but imaginary benefits, whilst the evils they inflict are exceedingly mischievous and almost inevitable. Undoubtedly it may have happened, that many disorders have, without any foundation, been ascribed to verminous irritation; for the etiology of disease is by no means a certain science. Besides, the same condition of the intestinal canal, that favors the generation of worms, may be the principal source of many of the complaints, co-existent with the presence of these animals. That verminous irritation, however, is sometimes the direct and exclusive exciting cause of severe and dangerous disorders, we may not disbelieve. Chorea, epilepsy, hydrocephalus, emaciation, convulsions, paralysis, fevers, dropsy, mania, and a vast variety of anomalous affections, are at times the immediate consequences of verminous irritation, and frequently disappear after the expulsion of the worms. Esquirol knew eleven persons cured of mania by the expulsion of a large number of lumbrici. Brera states, that a lumbricoides in the urinary bladder, produced nephritis and fatal disease of the bladder. The same author narrates, a case in which pains in the joints, similar to those of arthritic rheumatism, were occasioned by worms in the intestinal canal. The pains immediately ceased upon the expulsion of nine large lumbricoides. The presence of worms sometimes induces singular idiosyncrasies. An instance is recorded of a patient, afflicted with tænia and ascarides, to whom the sound of music, instrumental or vocal, was quite intolerable. Another case is related, where a person, in a convulsive fit from verminous irritation, heard by accident some musical sounds, and was immediately cured.

Treatment.—In prescribing for intestinal worms, we should have strict regard to the regimen, confining the patient to a spare and liquid diet, and exhibiting two or three mild purgatives, a few day's previous to the administration of anthelmintic remedies. These preparatory measures are calculated to secure success more frequently, from the employment of the ordinary vermifuges.

Lumbricoid.—My own plan of management for the expulsion of the long round worm, is to put the patient on a liquid diet, and to order him a small dose of epsom salts every morning for three or four days. On the fourth morning, I direct a decoction of the root of spigelia, in the proportion of an ounce of the root to a pint of water, boiled down to a half pint. This, being sweetened, is to be drunk in the course of three or four hours, by a child of from five to ten years old, commencing in the morning after having taken a little milk and water into the stomach. As soon as the whole of the decoction is taken, an active dose of calomel and jalap is to be administered, or a dose of castor oil and turpentine, in the proportion of half an ounce of the former to two drachms of the latter, given in doses corresponding to the age of the patient. I have rarely failed by this plan, to procure the discharge of worms, where they existed in the bowels. The remedies and modes of treatment, recommended for the expulsion of this species of worms, are almost innumerable. A few of them deserve our attention. According to Bremser, the electuary appended below[*] is highly efficacious as a vermifuge. It is to be given to a child in doses of a teaspoonful, every morning and evening for six or seven days. I have used this electuary in four or five cases, with complete success. Exhibited to such an extent as to produce frequent and watery evacuations, it does far less good, than when managed so as to procure three or four consistent stools daily. The empyreumatic oil of Chabert[†] has obtained great celebrity in Europe for its anthelmintic properties, especially in respect to tænia, and is indeed universally used on that continent. Bremser and Brera speak very highly of its virtues, and Rudolphi asserts, that it is decidedly the most efficacious vermifuge we possess. Fifteen or twenty drops may be taken three or four times daily, by children from two to seven years old. Small doses of

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[*]

Sen. Santonic.	℥ss.
Pulv. root valerian.	ʒii.
" " Jalapæ	ʒss—℈ii.
Snlphat. Potassæ	ʒiss—ʒii.
Oxymel. Scillit.	q. s.
ut fiat electuar. M.	

[†] This oil is made by mixing one part of the fetid spirits of hartshorn with three parts of the spirits of turpentine, and suffering them to digest for four days. The mixture is then to be put in a glass retort, and distilled in a sand bath, until three fourths of the whole have passed over into the receiver. This is to be kept for use in small and well closed phials.

calomel, with the powdered roots of spigelia and valerian, may be employed with advantage. Calomel, however, given in this way, is apt to produce ptyalism, especially as it is necessary to continue its use for several days, to insure its anthelmintic action. The chenopodium anthelminticum is well known in this country, as a vermifuge. By means of syrup, an electuary is sometimes made of the powdered seeds, and given, in doses of a tablespoonful, to a child of from two to five years old, twice a day—care being taken to abstain from food several hours. It is generally necessary to repeat the dose four or five days. Beside these articles, the most efficacious medicines, for the destruction and expulsion of the round worm, are—sem. santonic.; garlic; conferva helminthocordon; spirits of turpentine; geoffrea surinamensis; camphor; the green rind of unripe walnuts, and tin filings.

The expulsion of lumbrici is not, in general, a very difficult task. But to accomplish this desirable object completely, we should persist for a considerable time in the use of anthelmintic remedies, so as not only to destroy the already existing worms, but the eggs containing the germs of others. Their expulsion being effected, strict regard should now be paid to preventing a reproduction of them. In view of this object, the patient should attend particularly to his diet, living abstemiously on plain food. A free indulgence in saccharine matter, in milk, cheese, or butter, must be forbidden. Animal food ought to enter largely into the diet. Whatever tends to invigorate the general system, and bestow a wholesome energy on the stomach, should be carefully enjoined. Recourse must be had to tonics, particularly chalybeates, in conjunction with minute doses of aloes. A strong decoction of the helminthocordon has appeared to me, not only valuable as a vermifuge, but particularly so, as a corrective of that deranged and debilitated condition of the alimentary canal, favoring the production of worms. An ounce of this marine vegetable, with a drachm of valerian, should be boiled in a pint of water down to one gill. Of this a teaspoonful may be given every morning, noon and evening, with peculiar advantage. I have known several instances, in which children, apparently suffering from verminous irritation, were restored to perfect health by the use of this remedy, without any appearance of worms in their excretions. It is particularly beneficial in cases attended with the usual symptoms of worms, connected with want of appetite and mucous diarrhœa, which arise from mere debility of the digestive organs and a vitiation of the secretion of the bowels.

Ascarides.—These worms, in general, are extremely annoying. From their being involved in the folds at the lower part of the rectum, they frequently give rise to inflammation of the anus, tenesmus or hæmorrhoids. During the day, they are seldom a source of much uneasiness; but towards evening, and especially after lying down, they occasion a tormenting, an almost insupportable irritation and titillation about the anus. So distressing indeed is the irritation, that nervous children are not unfrequently thrown into convulsions thereby. In females, they sometimes pass into the vagina, giving rise to extreme uneasiness. Doctor Bremser states, that he knew a case of nymphomania, occasioned by their presence in that passage. They have also been known to enter the bladder and urinary passages. They are generally more troublesome in damp than in dry weather.

The complete removal of these worms is a work of great difficulty. They are so wonderfully reproductive, that no matter though thousands be brought away, we may soon have to recommence our task. The ordinary vermifuges, too, are of little avail in the destruction of ascarides. Their action is more particularly exerted upon the upper portions of the intestinal tube, and at all events lose their virtues before they arrive at the location of these animals. Even the most active cathartics are insufficient to expel them. Aloes, however, from the peculiar influence it exerts over the lower portion of the bowels, frequently causes their expulsion in large quantities, especially if assisted by the action of proper enemata. My usual mode of proceeding for the removal of these troublesome worms, is to prescribe three or four aloetic purgatives every second day, together with two or three enemata, composed of a mixture of lime-water and milk, in equal proportions, daily. Injections of a solution of aloes, or of infusions of any of the abovenamed vegetable anthelmintics, will generally succeed in bringing away great numbers of these little animals. In a few instances, I have procured their expulsion in large quantities, by injections, composed of spirits of turpentine, mixed with milk, in the proportion of a teaspoonful of the former to a gill of the latter. Injections of any of the common oils will oftentimes soothe the extreme irritation, and also destroy the worms. According to Nil Rozen, a drachm of refined sugar, dissolved in warm milk, has been injected with great success. Another remedy, highly spoken of, is a bougie, smeared over with mercurial ointment, and introduced into the rectum. Dr. Vanvert asserts, that flowers of sulphur, taken in the morning on an empty stomach, is one of the most efficacious remedies for the destruction and expulsion of ascaridies. In obstinate cases, the fumes of tobacco, or an infusion of the male fern, has been recommended by Dr. Bremser. When these worms have crept into the vagina, the same author states, that injections of cold water, with a small portion of vinegar, is the best remedy we possess.

As tænia occur chiefly in the adult, their treatment does not come properly under notice in this work.

[It may be well to remove an objection that is sometimes raised to the use of spigelia, as an anthelmintic. Administered alone, it is apt to produce more or less of cerebral determination, evinced by dilatation of the pupil, and disturbance of the head. These effects are only temporary; and they may be avoided by combining the pink-root with half as much senna. The decoction of the mixture, given at intervals, as we would give the spigelia alone, will soon act on the bowels, sufficiently to save the head from the transient derangement which sometimes excites alarm.

Nothing has answered so well, in my experience, for the destruction of the small worms that infest the rectum of young children, as spirits of turpentine, in doses of from three to six drops, three times a day, for two or three days, followed by a full dose of castor oil. This course may be repeated, if necessary.]

CHAPTER XXII.

OF OPHTHALMIA.

Purulent Ophthalmia.—The purulent ophthalmia of infants, generally commences between the fourth and eighth day after birth, though instances of its coming on at a more advanced period are occasionally met with. At first the eye-lids are observed to be glued together, in the morning attended with slight swelling and external redness. If the lid is raised, so as to expose its conjunctional surface, it is found of a uniformly red and slightly thickened appearance. As the disease proceeds, the swelling of the eye-lids increases; a thick purulent matter begins to issue from the eyes; the child becomes fretful and uneasy, and manifests much intolerance of light, keeping its eyes constantly and firmly closed. In the course of three or four days the conjunctiva becomes highly inflamed and œdematous—rising up around the cornea, so as almost to conceal it, or causing it to appear as if it were sunk deep into the eye. The secretion of pus is now extremely copious, and being confined under the swollen and firmly closed lids, it bursts forth, from time to time, and runs down the cheeks in large drops. If the disease be not arrested, the lids become distended to the utmost degree, giving rise, sometimes, to eversion and consequent bulging out, or protrusion of the inflamed and highly infiltrated conjunctiva. The cornea, also, has by this time become implicated, and is more or less opake. Should the disease continue, corneal ulceration and sloughing takes place, the aqueous humor escapes, and a total destruction of the organ ensues. Mr. Guthrie states that there are two varieties of infantile, purulent ophthalmia. In one, the inflammation is seated almost exclusively, in the conjunctiva of the lids; whilst in the other variety, the conjunctiva of the eye-ball is equally implicated in the disease. I have repeatedly noticed these diversities in the suppurative ophthalmia of infants. When the inflammation is confined to the lids, the disease seldom leads to any very serious injury to the eye; but it is, in general, quite as obstinate, and difficult to be subdued as the latter variety of the complaint.

The exciting cause of the suppurative ophthalmia of infants appears to consist of some acrid or morbid secretion in the vagina of the mother, applied to the infant's eyes during its passage from the womb into external life. I have never met with an instance of this disease, where upon enquiry I did not learn that the mother was affected with leucorrhœa or some other morbid vaginal secretion. The tendency of gonorrhœal matter, when applied to the eyes, to excite purulent ophthalmia is well known: and I have witnessed some striking examples of the same effect, from the application of leucorrhœal to the eyes, in adults. The fact, too, that the matter discharged from the eyes in cases of this kind, is capable of producing the same disease when applied to the eyes of others, furnishes strong testimony in favor of this etiology of the disease. Mr. Ryall, whose opportunities for observation on this subject have been very extensive, states, that he has frequently known purulent ophthalmia excited in nurses, "by the accidental application of the matter from the infant's eyes to their own." The time of its occurrence, also, affords some evidence of its dependence on a cause, connected in some way or other with the birth of the infant. If the disease were excited by intestinal irritation from bile and sordes in the alimentary canal, as some have supposed, it would, doubtless occur at every stage of infancy; whereas, its occurrence is almost universally confined to the two first weeks after birth, and in a vast majority of cases, comes on as early as the fourth day. This disease has also been ascribed to the "too early and unguarded admission of light and heat to the eyes of the new-born infant."* The great and sudden transition from the darkness of the womb to the external light, from the contact of the bland and congenial liquor amnii, to that of the atmospheric air, may, perhaps, at times operate injuriously on the tender eyes of the infant. It may be observed, however, that the good and all-wise author of nature, has endowed every creature with a capacity to accommodate itself to the inevitable changes and transitions, which it is destined to undergo, in the regular progress of its development, and it seems inconsistent with the perfect adaptation of the appointments of Providence that the new-born infant should be liable to serious inconvenience or injury from this cause. It cannot be doubted, indeed that unnecessary exposure of the infant's eyes, to a bright and heated light, may do much mischief. The practice of taking the infant, as soon as it is born, before a blazing fire, with perhaps a candle at no great distance, and keeping it "in this situation, not only during the time necessary for dressing, but often, long after this task is performed, lying on its side, on the nurse's knees, and with the face turned to the fire," is unquestionably very improper, and may be the source of much injury to the eyes.

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* Edin. Med. and Surg. Journal. vol. 4. p. 247.

Treatment.—Whenever there is reason to suspect the existence of some morbid vaginal secretion, more especially gonorrhœal, on the part of the mother, the infant's eyes ought to be immediately washed, in the most careful manner with tepid water. The water should be frequently changed and freely applied, so as to ensure the entire removal of the irritating matter that may adhere to the eyes. In all instances, care should, also, be taken, that the infant's eyes be not immediately exposed to a very strong light; for, although this may not, of itself, be capable of exciting this disease, there can be no doubt of its tendency to irritate the eyes, and to favor the occurrence of inflammation from other causes. By these precautionary measures, the disease may often be prevented, even where the most active virus has been applied to the eyes during the birth of the infant.

As the inflammation, in this affection is always very violent and rapid, the treatment during the early stage must be strictly and actively antiphlogistic. If leeches can be procured, two or three should be applied to the external angle or on the under lid of each eye; and the bleeding from the leech-bites should, afterwards, be promoted by warm fomentations or by the application of a soft emolient poultice over the eyes. The child should be kept in a dark room, and when the blood has ceased to ooze from the leech-wounds, the poultice and bandages must be removed, and a thin and soft piece of linen, constantly kept moist with a weak solution of the sugar of lead, laid over the eyes. The eye-lids must be prevented from adhering to each other, by washing the tarsi frequently with tepid water, or with thin mucilage of quince seed or of the pith of sassafras. If this be not attended to, and the pus be suffered to remain confined under the closed and adhering lids, the risk of blindness, from corneal opacity, or a total destruction of the eye will be greatly increased. Bland and tepid fluids should, from time to time, be cautiously injected under the lids, to wash away the purulent secretion; and for this purpose, a weak decoction of poppy heads, or the mucilaginous fluids just mentioned, or tepid milk and water are most suitable. The bowels should be freely moved by small doses of calomel, in union with ipecacuanna, or pulvis antimonialis, with an occasional dose of castor oil. A powder composed of one fourth of a grain of calomel and one grain of the pulvis antimonialis or a half a grain of ipecacuanna may be given four times daily. If these do not keep the bowels sufficiently loose, a teaspoonful of castor oil should be given, once daily, so as to procure four or five evacuations every twenty-four hours. The addition of antimonial powder to the calomel, has appeared to me peculiarly beneficial in such cases. The nausea and vomiting which is apt to follow the use of this mixture appears, frequently to do much good. Indeed the occasional administration of a gentle emetic in the early stage of the complaint, sometimes proves decidedly beneficial. I have, in several instances known immediate and very obvious benefit to result from the operation of an emetic dose of antimonial wine.

If in the course of about thirty-six hours the violence of the inflammation be not moderated, the leeching ought to be repeated. During the active period of the inflammation emolient fomentations, such as warm water, or infusion of white poppy heads, will assist in mitigating the pain, and local irritation: but, with the exception of a very weak solution of sugar of lead, all astringent and stimulating applications are in general highly injurious. As soon as the inflammation has been in some degree moderated, blisters should be laid on the temples, or immediately over the closed eye-lids, and kept discharging by some irritating ointment.

When applied directly over the eyes, they generally produce a more speedy and decided reduction of the inflammation than when laid on the temples. Under the prompt and active employment of these antiphlogistic measures, the pain, irritation, and swelling, usually begin to subside about the third or fourth day, and the discharge becomes gleety, at the same time that the conjunctiva assumes, a paler and flabby appearance. When the inflammation has thus, in part, subsided, recourse must be had to astringent and stimulating collyria. It is of great consequence, however, that remedies of this kind be not applied, until, the inflammation is considerably reduced. The most serious injury may result from exciting applications to the eye, during the active stage of the disease. After the discharge has acquired a gleety character, and the swelling and redness of the lids and conjunctiva are obviously moderated, great benefit may be derived from remedies of this character. A solution of the *chloruret of lime*, in the proportion of about ten grains to an ounce of distilled water, has been found peculiarly useful in the purulent ophthalmia of infants. I have myself employed it, in several cases, with unequivocal benefit. The nitrate of silver also, in the proportion of two grains to the ounce of water, forms an excellent local astringent in this affection. A few drops of this solution should be introduced into the eye, two or three times in the course of twenty-four hours. The best way of doing this is to lay the infant on its back, and pour a small portion of the solution into the inner angle of the eye. By slightly separating the lids the fluid insinuates itself between them and comes in contact with the inflamed conjunctiva. I have frequently injected this solution under the eye-lids with a small syringe, and generally with manifest advantage. When used in this way it must be diluted with an equal quantity of warm water. Dr. Dewees prefers a solution of the sulphate of zinc in rose water (in the proportion of a grain of the former to an ounce of the latter) to all other astringents. I have occasionally employed this article and generally with evident benefit. Its good effects, however, are commonly much less prompt and decided, than those of the nitrate of silver or the chloruret of lime; and in several instances where its use was not attended with any obvious benefit, I have known the nitrate of silver injected in the way just mentioned, to produce very excellent effects. This writer appears to me to entertain greater apprehensions of injurious consequences from the use of astringent collyria in this affection than is, I think, warranted by experience. During the active and unmitigated progress of the inflammation, all such applications to the diseased conjunctiva are unquestionably decidedly improper; but after the violence of the inflammation has been moderated, and the purulent secretion becomes profuse, thin and greenish, applications of this kind are not only harmless, but in general indispensable to the entire removal of the disease. I have never known any obvious injury to result from the use of nitrate of silver at an advanced stage of the complaint; and I have, in some cases, employed a solution of the strength of four grains to the ounce of water. Travers and several other writers, recommend a solution of alum, of the strength of two grains to an ounce of water.

Should the inflammation, unfortunately, go on to ulceration and sloughing of the cornea, the infant's system ought to be supported by tonics and anodynes. A teaspoonful of a weak infusion of the cinchona bark should be given three or four times daily, with the addition of a drop of laudanum every evening.

Scrophulous, or Exanthematous Ophthalmia.—This variety of ophthalmia generally occurs during childhood, and is frequently the first manifestation of the scrophulous diathesis. It is not, however, always attended with a scrophulous habit; and it may even be doubted whether its connection with the strumous diathesis is sufficiently common, to justify the term "scrophulous," by which it is usually designated. From its frequent association with eruptive affections about the head, the term *exanthematous*, has been given to it by Mr. Wardrop;* and Mr. Christian of Liverpool, has described the same affection under the name of *porriginous* ophthalmia, from its being in many instances preceded by porriginous pustules on the face and scalp.† Mr. Wardrop, however, affirms, that scrophulous inflammation of the eyes, "is a disease quite distinct from exanthematous ophthalmia." I cannot undertake to decide upon this point; but I am very sure, that all the cases of ophthalmia which I have hitherto met with in children, and regarded as instances of scrophulous inflammation of the eyes, were characterized by the same phenomena that are ascribed to the exanthematous variety of the disease.

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* Transact. Med. Chir. Society of Edinburg. vol. ii.

† Glasgow Med. Jour. No. I.

This form of ophthalmia is frequently attended with discharging sores behind the ears, and pustular eruptions on the scalp and face. The disease is characterized, by excessive intolerance of light, an enormous secretion of tears, and a muco-purulent secretion from the glands of the tarse, which, during sleep, is apt to agglutinate the eyelids. The pain, except in the commencement, is seldom great, and is attended with the peculiarity, that firm pressure upon the eye, always affords very considerable relief. Nor is the redness of the conjunctiva generally very conspicuous; but in recent and acute cases, an effusion of serum sometimes occurs around the cornea, giving rise to an elevated, œdematous circle, about a line or more in thickness, occupying the margin of the cornea, and presenting a peculiar reddish brown appearance (Jeffreys). Children, who are afflicted with this disease, are so painfully affected by the light, that they are constantly resorting to every mode in their power, for excluding it, as much as possible, from their eyes. The little patient keeps his eyes continually closed, holding the head down, and pressing his hands or a handkerchief firmly upon the eyes; or he rests his head against a chair in some obscure part of the room, or lies with the face buried in a pillow, or in the attendant's lap. "The intolerance of light is always most severe in the morning; and in the afternoon, it sometimes remits so much, as to allow the patient to open his eyes." The tears are not only extremely profuse, but so hot and acrid that they irritate and frequently excoriate the cheeks, alæ of the nose and upper lip. The parts immediately under the eyes, are almost constantly inflamed, and covered with a minute pustular eruption. In the majority of cases, the eyelids become somewhat swollen with turgid veins ramifying on their surface. " On trying to open the lids, a torrent of tears gushes out;" and the patient keeps them so firmly closed, particularly when an effort is made to open them, that it is always extremely difficult to obtain a view of the eye. Neither the kindest language, " nor the severest punishment," will induce the little patient to open his eyes; and such, indeed, is the suffering which is occasioned by the light, that the utmost effort of the will seems incapable of overcoming the involuntary contraction of the orbicularis of the eyes. In many instances, minute vesicles appear scattered over the cornea and conjunctiva. These vesicles break in violent cases, and form superficial ulcers. If the inflammation be not checked, these ulcerations sometimes gradually penetrate deeper into the substance of the cornea, until they form an opening into the anterior chamber and give exit to the aqueous humor. This unfortunate termination, however, occurs but very seldom, and only in cases of a very acute and violent character. More or less opacity of the cornea, is a very common occurrence; and when the disease becomes chronic, this event is inevitable. In cases of long continuance, tinea ciliaris and lippitudo occur; minute pustular ulcerations appear along the roots of the eyelashes, exuding a muco-purulent fluid, by which the edges of the eyelids are glued together; or the margin of the lids acquire a red and excoriated condition.

In general the pustular eruption about the head, and the discharging sores behind the ears, which precede the occurrence of this variety of ophthalmia, disappear soon after the inflammation of the eyes is fully developed. If these eruptions recur during the progress of the disease, then the inflammation of the eyes generally subsides, and the cornea can be examined. Wardrop asserts, that in exanthematous ophthalmia, no morbid secretion from the meibomian glands ever takes place. This statement is, however, contradicted by other writers; and I am confident, that I have seen several cases, unequivocally of this kind, in which there was manifest disease in the edges of the lids, attended with a glutinous secretion from these minute glands.

Along with these local symptoms, there are always distinct manifestations of constitutional disturbance. The child is generally fretful and irritable; the pulse frequent, quick and sharp; the skin often preternaturally warm and dry; the tongue covered with a thin white fur, and the stomach and bowels in a disordered condition. In many cases the abdomen is tumid and hard, the breath very offensive, and the alvine evacuations irregular and of an unnatural appearance. In cases of long standing, the flesh wastes,—particularly on the extremities, and the system becomes feeble and very irritable.

This form of ophthalmia is most frequently met with among the poor, of relaxed and irritable habits, "who have a white pasty complexion, with a tense and swollen state of the abdomen, and not unfrequently, enlarged lymphatic glands." It frequently succeeds measles, scarlet fever and other exanthematous diseases; more especially when soon after the subsidence of these affections, the individual has been subjected to the morbific influence of a cold and damp atmosphere. Children who have suffered eruptive affections about the head from difficult dentition, and who are much pampered with improper articles of food, often become affected with this variety of ophthalmia—more especially when the eruptions or discharging sores, have been prematurely dried up, by astringent and stimulating applications. It is probable, that this irritable form of ophthalmia is often excited by the ordinary causes of conjunctival inflammation, such as cold, dust or other common sources of irritation, and that it assumes the aggravated and obstinate character peculiar to this complaint, in consequence of a highly irritable and depraved habit of the system, from the influence of previous diseases or morbific causes.

Treatment.—In the commencement of the treatment of this variety of inflammation of the eyes, the principal attention, is to be directed to the general state of the system. All local applications of a stimulating or astringent character are not only wholly useless, but decidedly improper, until the morbid condition of the system has been improved, by a judicious course of general treatment.

General bloodletting does not appear to exert any obvious influence in subduing scrophulous or exanthematous ophthalmia. In recent and very acute cases, however, some advantage may occasionally be derived, from the application of leeches to the temples and external angles of the eyes; but in instances of chronic character or of long continuance, leeching is not only wholly useless, but often decidedly injurious in its consequences. In the beginning of the treatment, the bowels ought to be thoroughly evacuated, and afterwards kept in a loose state by the regular administration of suitable laxatives. Free and repeated purging is particularly important, when the abdomen is tumid and hard, and the alvine discharges of an unnatural character. "Even when this ophthalmia appears in a feeble and emaciated child, it will, usually be found, that, by the exhibition of purgatives, feculent matter, both unnatural in quantity and in quality, will be evacuated; and until its evacuation has been completely effected, other remedies will avail but little." Calomel combined with rhubarb, or jalap, should be given every two or three days, in doses sufficiently active, to produce pretty copious purging; or a few grains of colomel may be administered late in the evening, and followed, next morning by a dose of castor oil, or senna infusion. In cases that have assumed a strictly chronic character, repeated *active* purging is not, in general, beneficial. After the bowels have in the first place, been well evacuated, it will be sufficient, in instances of this kind, to keep them *moderately* loose, by small doses of calomel and castor oil. In all instances indeed, particular attention should be paid to the alvine discharges, and in proportion as they are observed to acquire a more natural appearance, the purgatives must be given at longer intervals and in less efficient doses; "for though the greatest benefit will be obtained, by evacuating the bowels, long continued and violent purging will be found equally prejudicial."

In some cases the digestive organs are prominently deranged—the appetite being variable and capricious, sometimes much depressed, and at others quite voracious. When this is the case, *emetics* are capable of procuring very considerable advantage. An aqueous solution of tartar emetic, appears to be the best article for this purpose. The emetic may be repeated every third or fourth day during the active stage of the inflammation. In protracted or chronic cases they rarely prove beneficial.

To promote the regular performance of the various excretory functions, minute portions of calomel and pulvis antimonialis should be given, several times daily; and when the system is very irritable, and the child does not rest well at night, a few grains of Dover's powder may be very advantageously added.[*]

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[*] ℞. Calomel grs. ii. Pulv. Antimonialis——Doveri——aa vi. Divide into equal parts. Give one every six hours.

After the disordered condition of the alimentary canal has been improved, by the means just mentioned, much benefit may sometimes be derived, "from the carbonates of soda and potass, either singly or combined with rhubarb and the bitter infusions."* The sulphate of quinine, also is a highly valuable remedy in this variety of ophthalmia, after the bowels have been properly evacuated. Dr. Mackenzie of Glasgow, asserts, that he has used it in a great many cases, and that, in the majority of instances its beneficial effects, "were very remarkable." In most of the little patients to whom the quinine was administered, "it acted like a charm." Sir A. Cooper, too, speaks in the most favorable terms, of the employment of this article in scrophulous inflammation of the eyes. I have myself, used it in nine or ten cases of this obstinate complaint, and in every instance with unequivocal benefit. In three of these cases, it effected a speedy and complete removal of the inflammation and morbid sensibility of the eyes. It is proper to observe, however, that its good effects can seldom be obtained at a very early period of the disease, and before the disordered condition of the bowels has been improved by mercurial purgatives, and a mild and digestable diet. The dose for a child of from three to seven years old, should be from a quarter to half a grain three times daily.

Various other internal remedies have been recommended for the cure of this malady—amongst which the *muriate of barytes*, and the *iodine*, appear to be the most important. Hufeland, in a small work on the employment of the former of these articles in scrophula, gives an account of five or six instances of scrophulous inflammation of the eyes, which yielded to the influence of this remedy. I have prescribed it, in several cases of this complaint, with considerable advantage, and it appears to me, worthy of more attention, in this respect, than it has, of late years received. The best mode of exhibiting this article is in solution. A half a drachm of the muriate of barytes, should be dissolved in an ounce of distilled water; of this solution, from ten to twenty drops may be given, to a child between two and seven years of age. The best vehicle for administering it, is sarsaparella syrup,

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Wardrop. loc. citat.

or the compound decoction of this root, as directed in the Dispensatories. The *iodine* has, of late, been strongly recommended as a remedy in this form of ophthalmia; but my own experience has not furnished me with any evidence of its usefulness in this respect. I have prescribed it in four cases of this kind, and although its use was continued for several months, not the slightest benefit resulted from it, in any instance. Nevertheless, no inconsiderable number of cases have been reported, in which this article is said, to have proved decidedly beneficial, and from its well known influence over strumous affections it is, doubtless entitled to attention as a remedy in the present disease.

Astringent and stimulating applications to the eyes seldom afford any permanent relief; and when used at an early period, before the general health has been improved, they may do mischief. As palliatives, however, slightly astringent collyria, such as a weak solution of the sulphate of copper, or of nitrate of silver, may sometimes be used with advantage. When the inflammation and pain are considerable, much relief is usually procured by fomenting the eyes, four or five times daily, with a decoction of white poppy heads, with a small portion of the extract of conium dissolved in it. I have repeatedly employed the nitrate of silver for this purpose, and occasionally with evident advantage. A few drops of a solution, of the strength of two grains to an ounce of water are to be instilled into the eye, once or twice daily. Mr. Mackenzie speaks favorably of a collyrium, composed of one grain of the muriate of mercury to eight ounces of water. After the intolerance of light and excessive secretion of tears has been so far subdued, as to enable the patient to open his eyes in a moderate light, considerable benefit will often result from the introduction of a small piece of red precipitate ointment (15 grains to an ounce of lard) within the eye-lids. At this stage of the disease important relief may often be obtained from slightly scarifying the conjunctiva of the lids. "If," says Mr. Wardrop, "a superficial incision, or rather a very slight scratch be made, with a sharp-edged instrument, or a common wedge-shaped scarificator, across the enlarged and distended vessels of the palpebral conjunctiva, the under eye-lid being previously completely everted and pressed on the edge of the orbit, an astonishing quantity of blood will sometimes flow, and the relief obtained from this simple operation is often very remarkable. If this operation is followed by considerable alleviation, it may be a few times repeated, until the increased fulness of the vessels and thickening of the eye-lids are removed, and one or two days allowed between each operation. Sometimes, however, the mere abstraction of blood is not sufficient to produce such a beneficial result, and then a small piece of the common ointment of the red oxide of mercury, may be put within the eyelids, immediately after the blood has been drawn."

When the tarsi are much affected, benefit may be obtained from the application of the red-precipitate ointment, of the strength mentioned above, to the edges of the lids. The citrin ointment, will also be found of great use, in such cases. When the disease is so far subdued as to admit of an examination of the cornea, "one or more specks, will generally be discovered, and in many instances distinct ulceration." If small pustules be observed on the cornea, they should not be opened by art, as they are then apt to degenerate into corroding ulcers, an occurrence which always greatly increases the obstinacy of the disease as well as the risk of ultimate loss of sight, from destruction or permanent opacity of the cornea.

Blisters do not often procure any obvious benefit in scrophulous ophthalmia. In cases manifestly attended with a scrophulous habit they may even do harm, by the pustular inflammation which is apt to occur around the blistered part, and the consequent additional source of general and local irritation which is thus produced. When however, the disease succeeds the healing or drying up of discharging sores behind the ears, or scabby eruptions about the head, considerable benefit may be obtained from a succession of small blisters behind the ears. In general, however, the insertion of a *seton* in the back of the neck, is much more efficacious than vesication in this variety of ophthalmia. After the acute character of the disease has subsided, the establishment of such a drain will almost always produce favorable effects. To prevent a relapse—and the tendency to a return of the disease is usually very great—the seton or pea issue is peculiarly valuable.

During the whole course of the treatment particular attention must be paid to the diet and habits of life. In recent and acute cases of the nourishment should be simple and unirritating, such as liquid and farinaceous preparations or thin animal broths; but in instances of a strictly chronic character, particularly when attended with feebleness and relaxation a more nourishing though plain and digestable diet must be allowed, in order to support the vigor of the system. All stimulating drinks, such as wine, and malt liquors must be carefully avoided. "The body should not be loaded with cloths, and the head particularly ought to be but slightly covered: protecting the eyes with only a single and narrow fold of *black* silk, hanging loosely over them, and not wearing a large bonnet. The hair ought to be cut very short, and the greatest advantage will be found from sponging the head and neck with fresh water every morning—using it at first of an agreeable temperature, and making it colder by degrees, particular care being taken to dry the head well afterwards" (Wardrop). During the declension of the disease, and after it has been subdued, regular exercise in the fresh and salubrious air of the country, sea-bathing, and the tepid shower bath, will contribute very materially to the entire and permanent removal of the complaint.

[The iodine treatment to which the author refers in the above article, is most probably the practice suggested by Lugol, in 1831. It embraces more than the mere internal use of the medicine, which, alone, will not always suffice. Having employed the iodine with signal success in scrofulous ophthalmia, I feel bound to urge attention to it. The medicine which I have employed, was the ioduretted solution called, sometimes, "Lugol's mixture." To make it, a half drachm of hydriodate of potash is dissolved in four ounces of water, and ten grains of iodine added. This is for internal use, in the dose of half a teaspoonful, for children of six to eight years old. A solution of double the strength of the above is employed to the eyes, as a lotion. If too strong, it must be diluted. It may be necessary to continue this treatment for three or four weeks.]

CHAPTER XXIII.

OF CHOLÉRA INFANTUM.

The cholera of infants differs in several material points, from the ordinary cholera of adults. It is almost invariably attended with distinct febrile irritation—frequently comes on in a gradual manner,—and is peculiarly liable to become protracted in its duration or to assume a chronic character. In many instances the disease commences with diarrhœa, which after having continued for a few days becomes associated with more or less violent vomiting. In the majority of cases however, the vomiting and purging come on nearly at the same time, without any other premonitory symptoms, than, perhaps, diminished or unusually craving appetite, flatulency and acidity of the primæ viæ, langour, and an uneasy and fretful temper. From the commencement of the disease, whether its accession be sudden or gradual, the pulse is usually frequent, quick, small and somewhat tense. The tongue is generally, at first, covered with a thin white fur; but in the progress of the disease,—particularly when it tends to a chronic form, its surface often acquires a dry, red, smooth or polished appearance. At first the discharges from the bowels usually consist of a turbid frothy fluid, mixed with small portions of green bile, or of a nearly colorless water containing small flocculi of mucus. After the disease is fully developed, the evacuations very rarely exhibit any traces of bilious matter, the biliary secretion being evidently entirely suspended. In some instances the disease commences and proceeds with such violence, as to exhaust the vital powers and terminate in death in the course of a single day. More commonly however, the vomiting and purging are not so rapid as to prostrate the system immediately, and the disease continues for five or six days, before convalescence begins or fatal exhaustion ensues. In many instances the vomiting, in the course of four or five hours, becomes less and less frequent, and finally ceases altogether, or recurs only two or three times daily, while the diarrhœa goes on, until, at last it assumes a strictly chronic character. In the early stages of the disease, the little patient is evidently harassed with painful and distressing sensations in the stomach and bowels; and when the discharges are violent and very frequent, the muscles of the abdomen, and even those of the extremities are apt to become affected with spasmodic contractions. If the disease does not terminate fatally, during the first few days, rapid emaciation ensues; the hands and feet become cold and pale, while the head and body are always preternaturally warm; the skin is usually dry and harsh and acquires a peculiar wilted appearance, particularly on the inner part of the thighs, and over the abdomen. The countenance becomes pale and contracted, the eyes, inanimate, and sunk, the nose sharp, and the lips thin, dry, and shrivelled. The thirst is always very great, more especially after the disease has continued for some days, and, no drink is palatable but cold water, which is generally thrown up soon after it is swallowed. Food of every kind is usually loathed and refused. If the disease be not subdued or moderated, by proper remedial means, the little patient, by degrees becomes somnolent, he sleeps with the eyes half open, rolls his head about, when awake, and at last, sinks into a state of insensibility and coma, and dies in a paroxysm of convulsions, or under symptoms resembling those of the last stage of acute hydrocephalus. When the disease is of protracted duration, or assumes a chronic form, the alvine discharges generally acquire a dark, very offensive, and acrid character. The digestive powers become so enfeebled, that almost "every thing taken into the stomach passes through the bowels, in an imperfectly digested state." Aphthæ finally appear on the tongue and inside of the cheeks: the face acquires a bloated or œdematous appearance, the abdomen becomes tumid and tympanitic; the parts about the anus are excoriated by the acrid discharges, and towards the fatal conclusion, spots of effused blood under the cuticle, sometimes appear on various parts of the body—more especially on those upon which the patient lies. The little patient at last lies in a comatose and insensible state, with the eye lids half open, and the globe of the eye turned up so as completely to hide the cornea. Dr. Dewees states that in many instances as death approaches, "a crystalline eruption" appears on the chest, consisting of an immensity of watery vesicles of a very minute size, which he says, "as far as he has observed," are always indicative of a fatal termination. "This symptom, he says, may readily escape observation if not looked for; it requires that the surface on which it has spread itself, should be placed between the eye and the light, and viewed nearly horizontally." I have, myself, never witnessed this eruption, but I do not doubt the correctness of the Doctor's observations on this point. There is another symptom mentioned by this respectable writer, which I have sometimes noticed in the last stage of this complaint, and which I have also occasionally observed in other forms of chronic disease of the alimentary canal; it is "the thrusting the fingers, nay almost the whole hand into the backpart of the mouth, as if desirous of removing something from the throat." This symptom is no less unfavorable than the preceding one.

The duration of cholera infantum is exceedingly various. It sometimes runs on to a fatal termination in the course of five or six hours. In other cases, the disease continues for many weeks, until the body is reduced to a state of extreme exhaustion and emaciation, and, nevertheless terminates favorably. Death sometimes takes place "most unexpectedly;" and recoveries, now and then occur "in a state of things apparently hopeless." When bilious matter begins to make its appearance in the evacuations and becomes more and more copious, a favorable result may be expected; but when the discharges become watery and nearly colorless, and continue in this state, a fatal termination is inevitable. I have never yet witnessed an instance of recovery from this malady, without the appearance of more or less bile in the alvine evacuations. So long as the liver remains torpid, the morbid irritability and inordinate action of the bowels will continue. A uniform moisture accompanied by a natural temperature of the skin, is a highly favorable symptom; for such is the sympathetic connection subsisting between the liver and the skin, that the latter scarcely ever resumes its regular functions without a simultaneous recurrence of the biliary secretion. When the pulse becomes feeble and thready, the discharges from the bowels watery and colorless—or reddish like the washings of flesh, or turbid fœtid and mixed with flocculi of mucus, accompanied with great uneasiness, and jactitation, or stupor and partial insensibility; and when in addition to these symptoms the skin becomes cold and clammy, and the countenance pale and cadaverous the worst consequences are to be apprehended.

When death takes place early in violent and rapid cases, the vessels of the liver, stomach, and intestines, are found, on dissection, engorged with blood. The mucous membrane of the bowels, generally exhibits traces of inflammation; and when the disease has continued for a considerable length of time, ulceration and abrasion of this structure, are occasionally met with. In some instances, considerable portions of the intestinal tube are so much contracted as scarcely to admit a small sized quill. The liver, besides the engorged state of its bloodvessels, is often greatly enlarged, particularly in cases of long continuance, and this enlargement is usually attended with a manifest increase of the firmness and denseness of its structure. In the majority of cases the gall bladder contains a pale or almost colorless fluid; but in some instances it is filled with a dark green and viscid bile. The brain in nearly all cases, is in a highly congested condition; and in protracted cases, serous effusions into the ventricles and upon the surface, of this organ are frequently met with.

The *etiology* of the cholera of infants, differs in some important circumstances, from that of the ordinary form of the disease in adults. Both these varieties of cholera, are almost exclusively confined to the hot months of the year; but cholera infantum is vastly more prevalent in large and crowded cities than in the country—a circumstance which does not obtain, in relation to the cholera morbus of adults. During a practice of twelve years in the country, I met with but two or three cases of this disease in infants. Again, the cholera of infants very rarely occurs previous to the third month, or after the twenty fourth month of age,—its occurrence being almost exclusively confined to the period during which the process of primary dentition is going on. There are therefore three causes whose concomitant influence is intimately concerned in the production of this variety of cholera; namely, high atmospheric temperature, the contaminated air of crowded cities, and the irritation produced by dentition. From the great prevalence of this disease during the hot months of summer, in the more filthy parts of crowded cities, it has been supposed, that it is a *malarious* malady, and "a mere variety of the bilious fever of our climate, the force of which is turned inwards upon the intestines"*. In support of this opinion, it is alleged by the respectable physician just quoted, that though seldom met with in salubrious districts of the country, "a majority of the children fall victims to cholera infantum, in the neighborhood of marshes, or in low, wet and otherwise unhealthy situations." This however is, by no means, confirmed by the observations of those who practice in paludal districts, where miasmata are most abundant. Unquestionably, cholera is more common, both in infants and in adults, in miasmatic localities, than in the high and dry districts of the country; and there can be no doubt, that miasmata have a tendency to favor the occurrence of this disease in infants as well as adults. That *malaria*, however, is not the principal morbific agent concerned in the production of cholera infantum, is evident from the circumstance, that the disease is almost exclusively confined to the first two years of infancy. If this were the chief exciting cause ot the malady, it could not be thus limited in the period of its occurrence. It is, moreover, to be observed that this disease usually commences as early as the latter end of May and acquires its most extensive sway in July, some time before the ordinary miasmatic diseases are wont to make their appearance in our climate, except here and there perhaps a few instances. In the eastern cities of this country, particularly in Philadelphia cholera infantum often prevails extensively during the months of June and July, when scarcely any of the diseases justly ascribed to the influence of miasmata are met with.

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* Dr. Condie. See his valuable Essay on "Cholera Infantum."—in the Phila our. of Med. and Phys. Sciences. May. 1825—p. 13.

High atmospheric temperature is manifestly, intimately concerned in the production of this dangerous complaint. It commences with the hot weather, "increases and becomes more fatal with the rise of the thermometer, and declines with the cool weather in autumn. During its continuance, it may be observed to vary with every permanent change of temperature. A few very hot days in succession in the month of June, are sufficient to call it into action; and during the height of its prevalence, a spell of cold weather will diminish, if not suppress it."* But as high and continued heat seldom gives rise to cholera, in infants enjoying the pure air of the country, there must be some other circumstance peculiar to cities which especially favors its tendency to develop the disease. This accessary cause consists, doubtless, in the confined and *impure* air of cities; and hence we always find this complaint most prevalent in the more crowded and filthy districts, and in the narrow and confined alleys, courts and avenues. "Let any one," says Dr. Parrish, "take a walk in a summer morning, through the thickly built lanes and alleys of Philadelphia, he will be struck wtth the appearance of the children, reclining their heads, as if exhausted, upon the breast of their mothers, with a pale and languid countenance, a cool and clammy skin, a shrunk neck, and other signs of debility, arising from their confinement, during the night, to close and hot apartments."

Dentition, also, manifestly contributes, in no small degree, to the occurrence of cholera infantum. Children, who have passed the period of primary dentition, though equally exposed to the heated and impure atmosphere, very rarely become affected with this complaint. It is evident, therefore, that the exciting causes of the disease must be materially influenced by some circumstance peculiar to infancy. It seems to me highly probable, that, in that irritable and enfeebled habit of body, which arises from the continued influence of a heated and impure air, the irritation of dentition is frequently intimately concerned in the production of this malady. In many instances the brain is in an irritated condition, even before the disorder of the stomach and bowels commences. Throughout the whole course of the disease, the head is always preternaturally warm, and in most cases, the infant is unusually restless, and fretful, for several days previous to the accession of the disease. The tendency of cerebral irritation to give rise to inordinate irritability of the stomach and bowels is well known. Diarrhœa is a very common, and when moderate, a salutary occurrence during the process of painful dentition. In the commencement of hydrocephalus, much gastric irritability and vomiting are seldom absent. In concussion of the brain vomiting is often a very troublesome symptom; and *sea-sickness*, which is often so violent as to resemble cholera, appears to depend entirely on a peculiar cerebral excitement occasioned by the swinging and rocking motion of a vessel at sea. The great tendency of cholera infantum, in its chronic form, to terminate in a state of cerebral oppression and coma, seems also to show, that the brain is especially predisposed to disease.

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* Dr. I. Parrish. Remarks on the Prophylactic Treatment of Cholera Infantum, &c North American Med. Jour. vol. ii. p. 68.

We may, therefore, presume, that in the irritable condition of the system, produced by the influence of a very warm and contaminated atmosphere, dentition causes more or less cerebral irritation, which being reflected on the stomach and bowels, renders them preternaturally irritable. If in this state of the alimentary canal, the cutaneous exhalents are over excited and debilitated by high atmospheric temperature, the slightest reduction of temperature, a current of fresh air, or damp night air, will readily cause a sudden torpor of these emunctories. The blood will retreat from the surface to the internal organs, and give rise to engorgement of the vessels of the liver and mucous membrane of the bowels, in consequence of which the irritability of the alimentary canal will be still further increased, and the characteristic symptoms of the disease excited.

There is still another circumstance which must be taken into view, in an account of the exciting causes of cholera infantum—namely, improper nourishment or errors in diet. Irritating, and inappropriate articles of food, are at all times apt to produce disorders of the stomach and bowels, and when the system is predisposed to affections of this kind, by the causes mentioned above, slight errors, in this respect, may give rise to an attack of cholera. A sudden transition from the bland and congenial nourishment obtained at the mother's breast, to an exclusive artificial diet during hot weather, is often speedily followed by an attack of this dangerous malady.

Treatment.—From what is stated above, in relation to the pathology of this affection, it would appear, that torpor of the hepatic and cutaneous functions, in connexion with cerebral irritation from dentition, exert a powerful influence, in developing and sustaining that irritable condition of the alimentary canal, upon which the characteristic phenomena of the disease depend. No means calculated to allay the excessive action of the stomach and bowels, can be of any permanent avail, if they do not, at the same time, tend to correct the morbid condition of the liver and skin; and hence, opiates and astringents are, not only useless, but almost invariably detrimental, unless accompanied by remedies capable of exciting these functions, and obviating cerebral irritation. In prescribing for this disease, our principal objects, therefore, must be, to restore the regular action of the liver and skin, to obviate irritation and sanguineous congestion in the brain, and to determine the circulation from the engorged vessels of the liver and mucous membrane of the alimentary canal, to the external parts of the body. To answer these purposes, I generally commence the treatment, with the application of leeches to the temples or small blisters behind the ears, the exhibition of small doses of calomel and ipecacuanna, and a large stimulating poultice over the abdomen. I am persuaded, by what I have repeatedly witnessed in my practice, that great benefit will in general result from local depletion, or from the application of blisters behind the ears, or on the back of the neck, in this affection. During the last seven years, I have treated but very few cases in which I did not, at once, apply blisters behind the ears; and I may confidently affirm, that since I have adopted this practice, I have been much more successful in the management of this disease, than previously. Dr. Parrish was, I believe, the first who pointed out the usefulness of blisters about the head in the cholera of infants. "In severe cases," he says "much good may be expected from the application of blisters behind the ears. I was led to this practice, by observing that the eruption, which, during dentition, is apt to make its appearance behind the ears, often proves a most salutary effort of nature; and that while it continues, the infant generally enjoys an exemption from those dangerous disorders incident to this critical period of life. To imitate nature as closely as possible, the discharge from the blisterėd surface should be maintained for some time, by stimulating dressings. I have witnessed the most beneficial effects from this practice and can strongly recommend it to the attention of the profession."* The gums should always be carefully examined in cases of this complaint. If they are in a swollen or inflamed and painful state, they should be freely divided, down to the advancing teeth. For the purpose of moderating the gastro-intestinal irritability and of stimulating the action of the liver, minute portions of calomel and ipecacuanna constitute, I think, the most efficient internal remedy we possess. From one sixth to a quarter of a grain of calomel in union with a quarter of a grain of ipecacuanna should be given every half hour, or hour, until the evacuations become mixed with bilious matter. The appearance of bile in the evacuations, is always to be hailed, as a very favorable sign; and the sooner the liver can be brought to resume its secretory action, the greater, in general will be the probability of ultimate success in our attempts to subdue the disease. Indeed so long as the liver remains inactive and the alvine discharges free from bile, the disease may be regarded as still possessing all its violence and dangerous tendency, whatever temporary abatement may occur in the severity of the vomiting and purging. Ipecacuanna, in minute doses is a most excellent auxiliary to the calomel, in affections attended with morbid irritability and excessive peristaltic action of the alimentary canal. Its tendency to counteract inordinate action of the bowels, when given in very small portions is very considerable, and its tendency, moreover, to excite diaphoresis, renders it still more applicable in this and other intestinal affections of this kind. When the vomiting and purging are extremely frequent, other means calculated to calm the irritability of the stomach and bowels may be advantageously used along with the calomel and ipecacuanna. The spirits of turpentine is an excellent remedy for this purpose. Dr. Condie, states that in his practice, the administration of from ten to thirty drops of this remedy, three or four times daily, "has not in a single instance failed in speedily checking the disordered action of the stomach." I have used this article in a considerable number of cases, and in most instances, with decided benefit. I prefer, however, giving it in much smaller and more frequent doses—namely, from four to six drops every hour until the violence of the vomiting has been moderated. I have also, occasionally, used a solution of camphor in sulphuric ether, (a drachm of the former to an ounce of the latter) with very obvious advantage. Five or six drops of this solution given every half hour or hour, seldom fails to moderate the excessive vomiting in this complaint. A large stimulating poultice, applied over the abdomen, is, generally, of material service in allaying the inordinate action of the stomach and intestines. Two or three tablespoonfuls of powdered black pepper, with a few teaspoonsful of cayenne, mixed up with a common emolient poultice will answer very well for this purpose. The application of a piece of flannel moistened with a mixture of equal parts of spirits of camphor and tincture of capsicum, often produces a very good effect. Blistering, however, is, I think decidedly the most efficient counter-irritating application. Before the blister is applied to the epigastrium, the part should be slightly bathed with spirits of turpentine, in order, to procure vesication as speedily as possible. The vesicatory should not be suffered to remain on the skin more than four hours. As soon as the surface is uniformly inflamed, which in children usually occurs in about four hours, and sometimes much sooner, the plaster ought to be removed, and a thick, and soft emolient poultice laid over the whole abdomen, including of course the inflamed surface. The poultice will, in a short time, excite the inflamed vessels to pour out a copious quantity of serum, under the cuticle, and raise a large blister, which should then be opened, and dressed with mercurial ointment prepared without turpentine or other irritating substances.

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* loco citat.

When from the tumid and tense state of the abdomen, there is reason to presume that the bowels are loaded with fæcal matter, the first few doses of calomel should be sufficiently large to procure its purgative operation. A grain or two may be given every two or three hours, until its evacuant effects are decidedly procured. After the fæculent contents of the bowels have been well evacuated, in this way, it will, I think, in general, be best to return to the minute and frequent doses of this article mentioned above. Except under the circumstances just mentioned—namely, a loaded state of the bowels, purgatives are not, in general, advisable in the commencement of the disease. When the disease continues, however, until the liver, under the exciting influence of the calomel, pours out an abundance of bile, mild laxatives are undoubtedly very useful. In cases that come on gradually and proceed slowly, it may perhaps be better to commence at once with purgative doses of calomel, than with the minute portions mentioned above. In instances of this kind, the bowels are frequently much loaded with fœcal matter and vitiated secretions, which it is of much consequence to evacuate, as speedily and completely as can be done, without resorting to very active or irritating purgatives. When there is reason to suspect the existence of acid in the stomach and intestines, much benefit may be derived from the administration of five or six grains of prepared chalk, with each dose of calomel and ipecacuanna; or what is, perhaps, preferable, from the use of small portions of magnesia in combination with ammonia, as recommended by Dr. Kuhn.[*] I have in some instances of this kind, administered six or eight grains of calcined magnesia, in union with five or six drops of the abovementioned etherial solution of camphor, with the happiest effect. Indeed, this combination is not only peculiarly effectual in cases attended with acidity in the primæ viæ, but is also a highly valuable remedy, for allaying gastric irritability, or excessive vomiting, even where there is a total freedom from acid.

When the abdomen is tumid, tense and tender to the touch, whilst the pulse is frequent, contracted and quick, blood ought to be abstracted either with the lancet, or by the application of leeches to the epigastrium. If blood be not promptly and efficiently abstracted, in cases attended with these symptoms, it will be "in vain to depend upon the effects of any remedy; for inflammation and its consequences will have ensued, long before we can hope to make any impressions on the affected viscera, even by the use of calomel." After blood has been abstracted, in cases of this kind, a blister ought to be applied over the upper portion of the abdomen. In all instances indeed, whether attended with symptoms of abdominal inflammation or not, blistering the region of the stomach, is a most useful mode of making counter irritation.

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[*] "The prescription made use of by Dr. Kuhn," says Dr. Condie, "was the following: ℞ Magnes. calcinat. ℈iv; pul. g. arab.. ℈i: sacch. alb. ʒii; aq. menth. pep. ℥ss; aq. fontanæ ℥iiss; M.: add aq. ammonia pura, gtt. xlviii to clxiv, according to the age of the patient. The dose of this mixture is a teaspoonful every two hours. *Vide Dr. Condie's Essay. Loct. Citat.*

The warm bath, also, is an excellent auxiliary in the treatment of this disease. It is especially indicated, when the skin is very dry and harsh, and the pulse quick and irritated. While the patient is immersed in the warm water up to the neck, a napkin wet with cold water, should be applied to the head, in order to lessen the determination of blood to the brain.

In the early stage of cholera infantum, the use of opium is, in general, highly improper. The great tendency to congestion and irritation of the brain, in this affection, renders all medicines of this kind decidedly prejudicial when given at an early period of the disease, or where, in its advanced stage, symptoms of cerebral oppression are manifestly present. Nevertheless, when in the *chronic* form of the disease, the patient is very restless and wakeful, with a dry and withered state of the skin, and there are no particular indications of cerebral congestion, small doses of Dover's powder, in union with minute portions of calomel, will sometimes produce very excellent effects. Great caution, however, ought to be used, in the administration of opium, even in cases of a strictly chronic character. I have witnessed some instances of this kind, in which the employment of this narcotic was speedily followed by stupor or cerebral compression without any obvious beneficial effect on the intestinal disorder.

Astringent and absorbent remedies are in general decidedly improper, in the early stage of the complaint. Much mischief has been done by the early administration of cretacious juleps. astringent mixtures, aromatic draughts and opiates in this malady. After the fæculent contents of the bowels have been well evacuated, and the secretory action of the liver has been excited by calomel, and in cases that have assumed a chronic character, the milder or less stimulating astringents, will, under judicious management, often procure very considerable benefit. I have, in some instances, derived very obvious advantage from a decoction of the root of the geranium maculatum in milk, in the advanced stages of the complaint. The *acetate of lead* has been very favorbly mentioned, as a remedy in this affection. As early as 1805 Dr. Mann of Massachusetts, recommended this article, as capable of procuring "considerable benefit in this disease."[*] Dr. Irwin of Charleston, South Carolina, also speaks strongly in favor of the employment of this remedy in the cholera of infants; and we have moreover, the authority of Dr. Chapman, in behalf of its usefulness in this dangerous affection. I have employed this article in four or five instances, with a result sufficiently favorable, to induce me to believe, that considerable benefit may be derived from its use, provided the action of the liver has been excited by the previous employment of mercurials. So long, however, as the evacuations indicate the existence of functional torpor of the biliary organs, and there is reason to believe that the intestines are charged with fæculent matter, it will, I am persuaded, be most prudent to abstain from this, and all other astringent substances. After the bowels have been thoroughly evacuated by calomel, and the alvine discharges assume a bilious appearance, and in cacases of a chronic character, small doses of the acetate of lead, may be used with a favorable prospect of advantage. The fourth of a grain of this article with an equal quantity of Dover's powder should be given every two or three hours, and continued until the inordinate diarrhœal action of the bowels is checked. In the advanced periods of the disease, I have occasionally procured considerable benefit, from a solution of the tartrate of iron. Forty grains of this preparation, may be dissolved in two ounces of water, to which half an ounce of ginger syrup should be added. Of this from twenty to forty drops may be given to an infant four or five times daily. Dr. Robert Jackson speaks very favorably of the use of finely powdered charcoal, in diseases of the intestinal canal at tended with morbid secretions; and Dr. Condie, states, that he has used this article with much advantage, "in the latter stage of the disease, when it had become, in some degree, chronic, and the discharges, from the bowels were acrid, dark colored and offensive." From my own experience, I can say nothing of this remedy, but I do not doubt its occasional usefulness, under the circumstances just mentioned. From five to ten grains of the pulverized coal, in union with four or five grains of rhubarb and a grain of ipecacuanna may be given every three or four hours.

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[*] A Dissertation upon Cholera Infantum, &c. By James Mann, M. D. Vide a Review in New-York Med. Repository, vol. ii. p. 309—for 1805.

When from the violence and rapidity of the disease, or from its long continuance, the exhaustion becomes very great, the extremities cold, and the pulse very small and feeble, internal as well as external stimulants become necessary. Stimulating frictions, wrapping the body in flannel wrung out of hot brandy and water, together with the use of wine-whey, milk punch, or a weak solution of carbonate of ammonia, with an equal portion of the compound tincture of cinchona, are indispensable to support the sinking energies of the system. I have known, much benefit to result from the use of the *tincture of cinnamon.* From fifteen to twenty drops should be administered in some mucilaginous fluid every four hours.

In the advanced periods of the complaint, severe colic pains, from flatulent distention of the stomach and bowels frequently greatly harass the little patient. To relieve these pains, Dr. Condie strongly recommends a few drops of the spirits of turpentine; and my own experience enables me to speak favorably of this remedy. The juniper oil, also, is an excellent palliative, for this purpose. When given with sulphuric ether and laudanum, it seldom fails to procure, very considerable relief. From ten to fifteen drops of the following solution, may be given three or four times daily.*

After the disease has been, in a considerable degree subdued, and the alvine discharges, have assumed a natural appearance, recourse should next be had, to remedies calculated to invigorate the stomach and intestines. A decoction of blackberry
milk, in the proportion of half an ounce

* ℞. Ol Juni

milk, often proves very useful at this advanced and declining stage of the disease. The common cretacious mixture, with the addition of a small portion of the tincture of kino, forms also, a very useful remedy for this purpose. But the remedy I have found most beneficial, in restoring the tone of the alimentary canal, is a mixture of equal parts of lime water, and infusion of peruvian bark, with four or five drops of the tincture of kino, with each dose. The dose for an infant, is a dessert spoonful four or five times daily, mixed with a little barley water or solution of gum arabic.

Throughout the whole course of the disease, particular attention must be paid to the proper regulation of the diet. If the child is nourished at the breast, and the mother or nurse furnishes a sufficient supply of wholesome milk, no other nourishment whatever, should be allowed. If it has been weaned, great care must be taken that the food be of the simplest and blandest kinds possible. Boiled milk; liquid preparations of arrow-root, tapioca, sago, rice; thin oat meal gruel, barley water, or a solution of gum arabic, are decidedly the most suitable articles of nourishment in every stage of cholera. In the *chronic* form of the disease, however, beef tea, or weak chicken broth, either by itself or mixed with some of the preceding articles, sometimes produces a favorable change in the state of the stomach and bowels. In cases of this kind, the little patient sometimes manifests a most urgent craving, for certain strong and stimulating articles of food, such as salted and smoked herring or shad, old and rancid bacon, salted beef, &c. whilst the stomach appears to loathe all the light and unirritating articles of nourishment, enumerated above. When this occurs, it will be proper too, cautiously to gratify the newly-awakened appetite, however, opposed to the ordinary dietetic rules the indulgence may appear to be. "I have seen many children recover," says Dr. Rush, "from being gratified in an inclination to eat salted fish, and the different kinds of salted meat. In some instances, they evince an appetite for butter, and the richest gravies of roasted meat, and eat them with obvious relief to all their symptoms." Without these strong instinctive calls of nature, however, it would be highly improper to allow such coarse articles of food—yet where the inclination for them, is distinctly manifested, it ought to be gratified, though always in a cautious manner.

Nothing contributes more to the removal of this disease—more especially when it tends to a chronic form, than the enjoyment of the pure and salubrious air of the country. Whenever it is practicable the little patient ought to be removed into the country; for this change is often sufficient to subdue the disease in a short time, without the aid of any other remedial means. If the circumstances do not admit of a removal from home to a suitable situation in the country, some advantage may be gained by carrying the patient about in the open and fresh air; and still more by frequent rides into the country in a carriage.

As a preventive measure, residence, or at least daily gestation, in the pure air of the country has a most salutary influence. If this advantage cannot be procured, every other practicable means should be adopted, to protect the infant against the relaxing and enervating effects of a heated and confined air. The practice of keeping the windows and doors closed, at night, and placing the infant upon a soft feather bed, with an abundance of covering, during the warm months of summer, has a most pernicious effect. "Examine," says Dr. Parrish, "in the morning, a child who has passed the night thus confined. You will find him limber as a rag, exhausted by perspiration, wholly destitute of animation, without appetite, and on the very verge of cholera." To avoid these injurious effects, the doors of the infant's sleeping apartment should be open, and, if the room is large enough to prevent the current of night air, from passing immediately over the child, the windows, also, should be kept open, with the shutters closed. The child should sleep on a mattress, "or on blankets folded and laid upon the floor; and the covering ought to be light but comfortable." The use of the tepid bath, or frequent ablutions with cool water will assist materially in fortifying the infant's system, and lessening the liability to an attack of this disease. The respectable physician, whom I have just quoted, strongly recommends, allowing infants the free use of cool and fresh water, as a beverage during the heat of summer, as a prophylactic against this and other maladies; and I have not the slightest doubt of the entire propriety of this advice. The child should be daily carried out, into the open air, and, if practicable, beyond the bounds of the city. All strong, flatulent, and indigestible articles of nourishment, should be carefully avoided. During the first year no nourishment is so congenial and appropriate as the mother's milk. Nourishment at the breast is particularly important during the active progress of dentition. If the child has been weaned, milk, preparations of arrow-root, tapioca, and sago—oat meal gruel, weak chicken broth, and beef-tea, constitute suitable articles of nourishment. Experience has shewn, that "the sucking of small pieces of salt meat—as ham, or dried beef," is often productive of manifest advantage. If the gums become inflamed and swollen they should be freely divided, down to the advancing teeth. Dr. Parrish speaks very favorably of the habitual use of aromatics, during the summer, as a means of guarding against the occurrence of this malady. He does not, however, advise, that they should be given, "indiscriminately to all children, during the summer." They are proper only in those cases, "in which a predisposition to cholera infantum exists." The daily use of moderate portions of ginger tea, or of a weak infusion of cinnamon, or of nutmeg, produces an excellent effect, in giving tone to the alimentary canal, and fortifying it against the influence of the usual exciting causes of this malady. I can say nothing from my own experience of the effects of this practice; but it seems very probable that, where there is general languor, with a weak and inactive state of the digestive organs, considerable benefit may be derived from the judicious employment of the milder and more agreeable articles of this class of stimulants, The use of small portions of porter and water, has appeared to me very beneficial in feeble and relaxed infants, during the warm seasons, as preventive of bowel complaints. It is to be observed, however, that when the system is under the influence of painful dentition, where the pulse is contracted and irritated, and the head very hot, particularly when attended with great irritability and fretfulness of temper, all articles of this kind are decidedly objectionable. It is only in cases of weakness and languor, accompanied with a feeble and relaxed state of the alimentary canal, and a sluggish state of the circulation, that they can be employed with propriety and advantage.

CHAPTER XXIV.

OF THE REMITTENT FEVERS OF INFANTS.

Children are subject to various modifications of remitting fever, which, in their phenomena, progress and causes, differ very materially from the ordinary remittent fever of adults. Authors have described this fever, under the titles of worm fever, the hectic of dentition, hectic of infants, and marasmus. Underwood gives a short description of four "kinds" of fever, peculiar to infancy and childhood, all of which are treated of by Butler, Pemperton, Colley and others, under the general head of *infantile remittent.* Burns divides the remittents of children into two varieties—namely, that which occurs "in early infancy," and that which takes place after the process of primary dentition is completed. This division is judicious and useful; for the cases that occur during dentition are usually characterized by some peculiar phenomena, and require corresponding modifications in the remedial treatment.

I. *Of the remittent fever of infants during dentition.*—This modification of infantile remittent, generally bears a close resemblance to the forming or initial stage of acute hydrocephalus, and indeed, there is not much difference between them; "for in both we have much cerebral irritation, and the difference is more in the result than in the early condition."

The first manifestations of indisposition, generally, occur during the night. The infant is, unusually restless, and starts frequently in its sleep, as if from sudden fright, or it remains awake and extremely fretful during the greater part of the night. Its skin is hot and dry, until towards morning, when a slight moisture breaks out about the head and chest. In the early part of the forenoon, the countenance is pale with an expression of suffering and discontent, and the little patient ceases to evince its usual playfulness and interest in its toys. The pulse is always very frequent, and generally contracted and firm. In the afternoon the irritability and fretfulness of temper increase, a circumscribed blush commonly occurs on one or both cheeks, the child is inclined to vomit, the frequency and tension of the pulse increase, the skin becomes hot, the urine is scanty and high colored, and in some instances so acrid, as to cause the infant to cry out with pain during micturition. A slight cough, with augmented secretion of bronchial mucus, generally supervenes after the disease has continued for some days, and the bowels are irregular, mostly costive, while the alvine evacuations are extremely offensive, and of a muddy-brown or bright-green and curdled appearance. If the disease be not counteracted by suitable remedies, the febrile symptoms gradually increase. The exacerbations become more violent and protracted—during which the infant generally lies in a somnolent or drowsy state, with the eyes half open and turned upwards so as to conceal the cornea. If the disease continues, the remissions become shorter and less distinct, and the symptoms of cerebral irritation more and more conspicuous—the eyes acquiring a dull, heavy and slightly injected appearance, and the countenance an expression of surprise or stupor. By degrees symptoms of cerebral oppression or effusion ensue, and the child dies in a state of coma or a paroxysm of convulsions. In some instances, however, instead of these hydrocephalic symptoms, the little patient is gradually exhausted, " by the continuance of the fever, or, more quickly, by the accession of rapid and obstinate diarrhœa.

If the disease is suffered to run on for six or seven days, it seldom terminates favorably before the end of the second week; and in some instances, after the violence of the disease has been subdued, a slow irritative fever continues for many weeks, or until the advancing teeth are completely protruded. In these protracted cases, the infant is pale, languid, extremely fretful and restless, with irregular bowels, and a frequent and very small pulse. The head is, usually, very warm, while the hands and feet are often cold; and in some instances, the face acquires a bloated or tumid appearance. Not unfrequently, however, the disease begins to subside as early as the fourth or fifth day. The exacerbations become shorter and less severe; the child rests better at night, and the skin becomes cooler and more uniformly moist and soft. The declension of the disease is often attended with moderate diarrhœa, or a profuse secretion of saliva, and "we sometimes find that, at this time, one or more teeth have made their appearance."

This modification of infantile remittent fever, appears to be an irritative fever depending on difficult dentition, modified and aggravated by gastro-intestinal irritation or a disordered condition of the chylopoietic organs. Throughout the whole course of the disease, distinct manifestations of cerebral irritation are present, and in many instances, the brain is obviously in a state of erethism for many days, before the disease assumes a decidedly febrile character. The disease very rarely, if ever, occurs, when the advance of the teeth through the gums is attended with a profuse secretion of saliva or a moderate diarrhœa. Costiveness and a dry and unusually warm condition of the mouth, are among the most constant symptoms of the early stage of this disease; and in most instances there are very obvious indications of irritation in the gums.

Treatment.—The mouth should always be carefully inspected, and if the gums are in the slightest degree swollen or inflamed, they should be freely divided. The irritated and irritating contents of the bowels must be evacuated, and remedies prescribed for correcting the biliary and intestinal secretions. For this purpose, one or two grains of calomel should be administered, so as to procure free purging. If the calomel is slow in operating, or inefficient, it should be followed, in three or four hours by one or two teaspoonfuls of castor oil or of the syrup of rhubarb. After the intestines have been, thus, well evacuated, they must be kept in a loose state by the regular administration of very small doses of calomel in union with ipecacuanna. The fourth of a grain of the former with half a grain of the latter, may be given four times daily, and if these do not keep the bowels sufficiently open, their aperient operation ought to be promoted, by a suitable portion of magnesia, castor oil, or rhubarb, once every twenty-four hours. If the child is robust and plethoric much advantage may be derived from the abstraction of an ounce or two of blood, either with the lancet, or by leeching about the head; and when the pulse continues to be active and tense, and there are decided indications of cerebral irritation, the bleeding ought to be repeated until an evident impression is made on the action of the heart and arteries. After the violence of the reaction has been, in some degree, moderated, by evacuants, a blister should be applied to the back of the neck. When the head is very hot and a tendency to stupor occurs, cold applications to the head are very useful; and, if at the same time the hands and feet are cold, sinapisms or vesicatories may be advantageously applied, to the wrists and soles of the feet, or above the ankles. Some benefit may also be obtained from the use of diaphoretic remedies. The following mixtures are well adapted for this purpose.[*] When the stomach is not too irritable, tart. emetic, in minute doses, is calculated to operate very beneficially in cases of this kind. When there is much cerebral irritation with an active and firm pulse, this article may, in general be given in pretty active dcses, without exciting much vomiting. I have often given the eighth of a grain, every two or three hours, to infants laboring under this complaint, with but little or no vomiting, and generally, with a decided sedative impression on the action of the heart and arteries. The effects of opium in this complaint are very uncertain. In some instances, it operates very injuriously,—increasing the determination of blood to the brain, and hastening the supervention of cerebral inflammation and oppression. In other cases, its effects are highly beneficial. It moderates the general irritative condition of the patient, lessens the frequency and tension of the pulse, and removes all the alarming symptoms of approaching inflammation and effusion within the head. It is, indeed, often extremely difficult, to determine satisfactorily, merely from the symptoms, whether this narcotic be proper or not. When the symptoms indicate a strong tendency to, or the actual presence of inflammation of the brain,—

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[*] ℞. Pulv. Extract Glycyrrh. ʒii; Pulv. Nitrat Potass ℈i; Aq. fontanæ ℥ii; Vin. Antimon. gtt. xl; M. Dose, a teaspoonful every two or three hours.

[*] ℞. Spirit Minderiri, ℥ii; Syrup Limonis ℥i; Vin. Antimonii gtt. 40: Spirit Nitn Dulc. ʒiss. M. ft. Dose, a teaspoonful every three hours.

that is, when the child rolls its head about on the pillow, keeps its hands pressed on the forehead, shuns the light, starts and screams out suddenly, has a discontented and frowning expression of the countenance and is withal of a robust and plethoric habit, the use of opium, will probably result in serious injury to the patient. When, on the other hand, the general habit is feeble, or free evacuations have been premised, and the little patient is restless, irritable and fretful, with a pale and languid countenance, we may, with but little risk of injury resort to this remedy; and its effects in cases of this kind, are often highly favorable. Even in cases, however, where there was much reason to apprehend the existence or near approach of cerebral inflammation, I have known the most decided benefit to result from the regular exhibition of small doses of Dover's powders in union with calomel. Free purging, should always be premised; and when the pulse is active and tense, as it almost always is, blood ought to be efficiently abstracted, before opiates are resorted to.

The best form, perhaps for administering opium in this disease, is in combination with calomel and pulvis antimonialis. The twentieth of a grain of this narcotic, with a fourth of a grain of calomel and half a grain of antimonial powder, may be given every three or four hours. Burns recommends the use of a few drops of the tincture of hyoscyamus, with a saline julep, to moderate the general irritation. I have used the tincture of belladonna for this purpose with evident benefit. Three or four drops given, twice or thrice daily, frequently produces an obvious abatement of the irritability and restlessness of the little patient. The daily employment of the tepid bath, is calculated to do considerable good, in moderate cases of the complaint by relaxing the skin, and allaying irritation. It should be used during the febrile exacerbation, and the child must not be suffered to remain in the bath longer than about ten minutes. This remedy is particularly useful in cases, depending, mainly, on difficult dentition. It seldom fails to tranquillize the system, when used in instances of this kind.

If, after the acute spmptoms have gone off, the disease continues in a chronic form, the child being pale, languid, emaciated, fretful, and restless during the night, with a small and thready pulse, and a disordered state of the bowels, gestation in the open air of the country, often proves highly beneficial. In this stage of the disease, I have derived very considerable advantage, from the use of Dr. W. Fordyce's *pulvis antihecticus infantum*—consisting of from ten to twenty grains of the sulphate of potash, in union with from five to eight grains of powdered rhubarb, according to the age of the child. Such a portion should be given every morning, until the alvine evacuations assume a more natural appearance, and the action of the bowels become regular. A few grains of Dover powder, with the fourth of a grain of calomel should be given every evening. In cases of this kind, the tincture of hyoscyamus and belladonna are, in general peculiarly beneficial. Three drops, in a teaspoonful of spirit Minderiri sweetened with lemon or ginger syrup, should be given three or four times daily.

The infant's diet must be carefully regulated throughout the whole course of the disease. Animal food of every kind is decidedly objectionable. If the child is still nourished at the breast, and the mother or nurse furnish a sufficient supply of good milk, no other nourishment is necessary. If there is a deficiency of milk, or if the child has been weaned, it should be confined to the use of thin preparations of arrow-root, sago, and oat-meal, and a mixture of three parts of cow's milk and one of water. During convalescence, or in a low and chronic state of the disease, weak beef or chicken tea may be allowed, along with the farinacious preparations just mentioned. Equal parts of thin arrow-root and chicken tea forms a good nourishment in this condition of the patient.

II. *Of the remittent fever of children after dentition.*—This modification of remitting fever, very rarely occurs previous to the second year, and is evidently intimately associated with derangement of the chylopoietic system, or gastro-intestinal irritation. In some instances the disease comes on suddenly, in consequence of overloading the stomach, or of the use of irritating and indigestible articles of nourishment. The attack generally occurs at night. The child becomes pale and cold or is seized with chilliness, which, in most cases, is soon followed by nausea and vomiting. Febrile reaction speedily ensues; the skin becomes extremely warm and dry, the pulse very frequent and strong, and the little patient is very restless, thirsty, and usually complains of headache, and severe transient pains in the stomach. Towards morning, a slight perspiration breaks out about the head and chest, and the febrile symptoms remit, leaving the child pale and languid, without the least appetite for food. In the course of the morning generally about ten or eleven o'clock, the child's countenance becomes contracted and very pale, its hands and feet are cold, nausea, and generally vomiting occur, and a second febrile exacerbation ensues, which usually continues until the following morning, when a remission takes place, which, if the disease is not arrested, is again succeeded by a paroxysm of fever. During the first ten or twelve hours, the tongue is generally clean; but in the course of the second day, it becomes covered with a white fur, which soon acquires a brown appearance, and in protracted cases, at last becomes almost black. The bowels are generally extremely torpid, the pulse though frequent, full and quick, is seldom firm or tense; the thirst is always very great, and the child complains of almost constant headache. During the first two or three days, nausea and vomiting occur repeatedly, and the child, usually, feels somewhat relieved, particularly of the headache, after each spell of vomiting. After the disease has continued for some days, the little patient is apt to remain in a drowsy state during the febrile exacerbations, and is apt to pick the lips and nose with his fingers, until they become quite sore.

Cases of this kind, if not subdued, at an early period, often continue for several weeks. The abdomen, at last, becomes tumid and distended with wind, or tympanitic; a black sordes collects about the lips and teeth; if a purgative is given, a reddish, or muddy water passes off, mixed with small masses of solid feculent matter and small flakes of mucus, or the discharges are black and glairy, or green and curdled.

Much more frequently, however, this variety of fever comes on in a gradual manner. The child begins to droop; its countenance is pale, with an expression of languor and uneasiness, the pulse frequent and small, the hands and feet cool and the head and body generally unusually warm. In the afternoon—slight febrile symptoms occur, and in many instances, several attacks of feverishness take place in the course of the day, during which, the child, generally lies down, and falls into a heavy and disturbed sleep. In the intervals of these slight febrile exacerbations, the little patient appears to be "tolerably well, but is easily put out of temper," and seems to feel a general soreness of the flesh, causing him to fret and cry out as if in pain when touched or lifted. The tongue is covered with a thin white fur, the thirst is moderate, and the appetite, in general, depressed and capricious. The bowels are usually torpid, though in some cases, the stools are frequent, liquid and very offensive. The evacuations are seldom very bilious, and in many instances, there is a manifest deficiency of bile. These symptoms, generally, continue for eight or ten days, when all at once, a severe paroxysm of fever, occurs, preceded by chilliness or shivering attended commonly with nausea and vomiting. The pulse becomes very frequent, full, and somewhat tense, the countenance flushed, and the drowsiness is much increased. The patient seldom complains of pain in any part, except occasionally, of transient and sometimes very severe pains in the abdomen. If, however, pain does occur in the head, which is by no means common, it is usually "both violent and permanent." One of the most constant symptoms attending the fully developed state of this fever, is, an incessant picking of the lips, nose, and angles of the eyes. When the disease has advanced to this stage, there is an entire loathing of every kind of food; digestion appears to be wholly suspended, and the tongue becomes covered with a thick fur, which soon acquires a dark brown color. The intestines are, almost invariably, exceedingly torpid, and the alvine evacuations are "without the smallest resemblance either in appearance or smell, to those fæces, where the power of digestion has been exerted." They are dark or black and glairy, or thin and foamy, resembling yeast, or curdled and dark green, with a very peculiar offensive smell; and in some instances, they are whitish or clay-colored, "indicating a deficiency of bile." (Burns.) As the disease advances, delirium occurs during the exacerbations, and in the last stage, it sometimes continues for two or three days, with but slight and temporary abatements in the morning In general, however, the patient may be roused from the delirium for a minute or two, so as to answer questions distinctly. At first the febrile exacerbations occur only in the afternoon; but by degrees, they become prolonged, so as to leave but very short and imperfect remissions between them. During the delirium, the child picks at the bed-clothes, is very restless, starts up suddenly, and moans and sighs almost constantly; and in severe cases it has fits of violent screaming and agitation. Towards the fatal termination of the disease, convulsions, paralysis of one side, strabismus, or deep coma sometimes occurs. The abdomen, generally, becomes tumid and tense or tympanitic, in the advanced stages of the disease, and, in some instances a total retention of the urine takes place.

After this fever is once fully developed, it seldom terminates before the seventh or eighth day, and, most frequently, continues for several weeks. When paralysis, strabismus, or convulsions occur, there can be but very slight hopes of a favorable termination. These symptoms are, however, not always indicative of a fatal result, for patients sometimes recover, after all the usual signs of cerebral effusion have supervened. Nevertheless, when symptoms of this kind are attended with a bloated and tense state of the abdomen, and watery discharges from the bowels. all hopes of a fortunate termination are in vain.

In some cases, this fever never becomes very violent, but creeps on in a slow or chronic form for three or four weeks. In instances of this kind, there is always a considerable remission in the morning, even in the advanced stages of the complaint, and the exacerbations are scarcely ever attended with delirium or very great drowsiness. At first the appetite is depressed, but in the course of four or five days, it generally improves, and the child will eat, pretty freely, during the remissions. The alvine evacuations, however, exhibit a very unnatural appearance, and are extremely offensive. The intestines become greatly distended with wind so as to give a tumid and drum-like elasticity to the abdomen. Evacuation goes on rapidly, and the countenance acquires a very pale and haggard appearance. The brain, at last, sometimes becomes affected; the child becomes more and more fretful during the remissions and drowsy in the exacerbations. It starts and screams out in its sleep, grinds its teeth, turns the eyes up so as to hide the cornea, and finally sinks into a state of constant somnolency, coma, attended, perhaps, with paralysis and convulsions.

Dr. Underwood mentions a modification of this fever, the most remarkable symptom of which, he says, is the occurrence of "inflamed and sometimes painful tumours," seated chiefly on the inferior extremities, more especially along the spine of the tibiæ. They acquire the size of a nutmeg, in the course of the second day, and soon become soft, resembling small abscesses. They do not, however, suppurate, or contain matter, and generally disappear again, in four or five days. I have met with a few instances of this kind, and have not found them to be attended with any peculiar difficulty or obstinacy.

It is often extremely difficult to distinguish infantile remittent fever from acute hydrocephalus, and in some cases, indeed, there exists no essential difference between them—the causes and prominent pathological conditions being in every important respect of the same nature. In many instances, however, infantile remittent fever, though similar in appearance, with hydrocephalus, is nevertheless, sufficiently distinct from it, to render a correct diagnosis between them of considerable consequence, both in a prognostic and remedial point of view. The following circumstances, will in general enable us to distinguish the two complaints from each other. In hydrocephalus, the face is frequently flushed, and the child tosses its hands above the head, or presses them on the forehead. In infantile remittent, the countenance, though occasionally flushed is generally pale and leaden or of a dingy pallid appearance; and the little patient is constantly picking the lips and nose with the fingers. In hydrocephalus headache is an almost constant symptom, and is often so acute as to cause the child to cry out "oh my head." It is, also, usually connected with much intolerance of light. In infantile remittent, headache rarely occurs, and when it does come on it is usually transient and connected with nausea or vomiting. In the early stage of hydrocephalus there is generally frequent vomiting particularly when the child is raised into a sitting or erect pos ture. In remittent fever, this is much less common, nor is apt to occur when the patient's head is suddenly raised. In the former affection, the abdomen almost always becomes flattened; whereas in infantile remittent fever, the abdomen becomes tumid, tense and elastic or hard. Goelis insists particularly on the importance of this circumstance, as a diagnostic sign in these affections. In idiopathic hydrocephalus, diarrhœa or looseness of the bowels scarcely ever occurs, in the early stage of the disease. In remittent fever, diarrhœa is no uncommon symptom, in the commencement of the complaint. In the former affection, the nostrils and mouth are dry, in the latter, they are generally moist with mucus, and the secretion of saliva is increased. The delirium of hydrocephalus, is generally more constant, and, after it has continued for some time, the patient cannot be roused from it, as in the remitting fever. The pulse also, is much more irregular and tense, and in the advanced stage, when stupor or coma is present, it, usually, becomes slow and intermittent. There is strabismus, deep sighing, sudden and violent screaming, and in most cases, constant rolling of the head, and frequent grinding of the teeth. In the infantile remittent the breath is often offensive, which is rarely the case in idiopathic hydrocephalus. In the advanced stages of the former complaint, there is almost invariably a great aversion to every kind of food; but in the latter disease, the patient frequently takes without reluctance, whatever is offered, "apparently making no distinction between what is palatable and what is nauseous." The alvine evacuation, will, also, aid us in forming a satisfactory diagnosis. In the fever under consideration the stools are always "remarkably changed from their natural appearance." They are sometimes perfectly black and glairy, resembling tar, with a smell that has been compared to putrid mud; at other times they consist of a dark green fluid mixed with shreds and flocculi of mucus. In hydrocephalus, the stools are, at first often light colored, and after the disease has continued for four or five days or longer, they frequently exhibit a foamy and light green appearance, of the consistence of thick syrup or pap, resembling chopped spinage. If after an attack of convulsions, the mental faculties are restored "and the history of the disease accord with the symptoms above described, we may securely pronounce that the head is not the source of the convulsions, but that it is merely a symptom of intestinal irritation" (Pemperton). It may be observed, that when the symptoms are so ambiguous as to render it doubtful whether they depend on meningeal inflammation and effusion, or on mere sympathetic irritation and vascular tergescence of the brain, the exact diagnosis cannot be of material service in the treatment, since the same means are indicated, and would be used whether the cerebral affection be primary and independent, or secondary and symptomatic of gastro-intestinal irritation.

The usual exciting causes of the present variety of infantile remittent fever, are, improper food, a torpid state of the bowels, worms, vitiated or acrid secretions from the liver, cold and moisture, dentition, and perhaps deficient attention to cleanliness, pure air, and exercise. All who have written on this disease agree, in referring it to a primary irritation located in the stomach and bowels, with disordered functions of the biliary organs. Mr. Colley thinks, that the primary disorder consists in torpor or defective action of "some part, or of the whole of the chylopoictic system, and generally of the liver stomach and intestines." It is, indeed, sufficiently evident that both the stomach and bowels are extremely inactive, in this malady; digestion is soon entirely suspended; and, in the early periods of the complaint, the alvine evacuations often, indicate a deficient secretion of bile. In consequence of this torpid state of chylopoictic organs, the contents of the intestines, probably, undergo such chemical changes "as to become the source of extreme irritation" to the mucous membrane of the alimentary canal. The vitiated secretions from the liver and intestinal glands, also, contribute to the same injurious result; and it is not improbable that the blood itself, may undergo some morbid change, in consequence of the absorption of chyle imperfectly elaborated, and vitiated by the depraved fluids generated in the alimentary canal. The tendency of gastro-intestinal irritation to excite disease in other organs, particularly in the brain, is well known. Dr. Burns observes, that "we are not yet enabled to say, what particular mode of irritation gives rise to the different modifications of phenomena; or why, in one case the same apparent exciting cause should produce spasmodic, and in another febrile affections." Broussais has thrown some light on this interesting subject. It would appear, that when the local irritation is purely nervous, the sympathetic consequences will be confined to the nervous system; but when the local irritation involves, also, the capillary blood-vessels, that is, when there is inflammatory irritation, the secondary effects will be febrile and inflammatory. Thus if some very indigestible substance be taken into the stomach, the immediate impression on the gastric nerves will be communicated to the brain, and convulsions or some other spasmodic or purely nervous affection will probably occur. If the substance remain long enough to excite local vascular irritation in the stomach or bowels, the sympathetic consequences will be febrile.

Treatment.—From the symptoms, causes and pathological character of this disease, it is obvious, that the principal objects to be kept in view in the treatment, are, to clear the bowels of their vitiated and irritating contents; to correct the biliary and intestinal secretions; to obviate cerebral irritation; and finally, to moderate the excessive action of the heart and arteries. In cases that come on suddenly after eating some improper substances, or overloading the stomach, the immediate exhibition of an emetic, followed, after it has ceased to operate, by an active purge, will in general suffice to put a speedy termination to the disease. The irritating causes are thus removed out of the alimentary canal, before they have excited a fixed inflammatory irritation, and the disease consequently speedily subsides. If, however, the offensive substances received into the stomach are peculiarly irritating, and a predisposition exists to inflammatory irritation in the mucous membrane of the alimentary canal, or in some other organ; or if proper evacuants be neglected soon after the accession of the fever, the disease will be apt to continue for many days, however diligently the stomach and bowels be evacuated by emetics and purgatives. It is generally very difficult to procure free evacuations from the intestines in cases of this kind, particularly when the disease has been excited by hard and very indigestible substances, such as cherry stones, orange peel, raisins, almonds, &c. In some instances, portions of the irritating substances are retained, and discharged in an imperfectly digested condition, four or five days after they were taken into the stomach, although the bowels are daily evacuated by active purgatives. If the intestines resist the free operation of purgatives, active clysters ought to be administered to procure the desired effect. When the pulse is full and active, and particularly when the face is flushed and the head very hot, much benefit may be derived from bloodletting. It would seem that the intestinal torpor, in this complaint, frequently depends, in a considerable degree, on vascular fulness in the brain; and hence an efficient abstraction of blood, almost always increases the susceptibility of the bowels to the operation of aperients. It is not, however, merely on this account, that bleeding is proper, during the exacerbations of this fever. When the pulse is full and strong, the momentum of the circulation should be speedily moderated, with the view of obviating local inflammation and dangerous congestion.

In the second modification of the disease—that is, in those cases that come on gradually, emetics are much less important remedies, than in the preceding variety,—brought on suddénly, in consequence of the reception of irritating substances into the stomach. Nevertheless, if in the commencement of the disease there is reason to suspect the existence of offensive materials in the primæ viæ, more especially when the patient is affected with nausea or retching, the exhibition of a gentle emetic, generally produces a very beneficial effect. The bowels should, in the first place, be thoroughly evacuated, and aftewards kept in a loose state by the regular employment of suitable aperients. It is often as difficult to procure free evacuations from the bowels in this as in the preceding modification of the disease. In general, however, sufficient purging may be excited by the administration of from six to eight grains of calomel, followed, in four or five hours, by a full dose of castor oil, or of infusion of senna and manna. In some instances of extreme torpor of the bowels in this affection, I have obtained very copious purging, by the employment of castor oil in union with the spirits of turpentine, some hours after the exhibition of a dose of calomel. A dessert spoonful of the oil with twenty or thirty drops of the turpentine may be given every hour, until active purging is produced. Calomel, however, both as a purgative and an alterative, is, undoubtedly, the most important remedy we possess in the treatment of this malady. After the alimentary canal has been well evacuated, this article ought to be regularly employed with a view to its constitutional or alterative influence, as well as to its aperient operation. Whether the liver be torpid or otherwise, it is quite certain that its functions are much disordered; and, until the morbid condition of this important organ is improved, no favorable change can take place in the general state of the disease. With this view, calomel should be exhibited, in small doses, three or four times daily, and its laxative effects promoted by the occasional administration of a dose of castor oil, or of epsom salts. It may be very advantageously given in union with small portions of ipecacuanna or of the pulvis antimonialis. I have generally prescribed a grain of calomel with half a grain of the antimonial powder, three times daily; and, on the following morning one or two drachms of epsom salts, or a few teaspoonfuls of castor oil. This course should be pursued until the alvine evacuations begin to exhibit a more natural appearance, after which the calomel must be given at more remote intervals, or wholly laid aside. In general more benefit may be derived from small and repeated doses of calomel than from large ones less frequently administered. Although purgatives are always decidedly indicated in the treatment of this affection, yet very active purging, after the bowels have been freely evacuated, is, as a general rule, by no means advisable. The daily employment of drastic, or very active purgative remedies, is apt to give rise to inflammatory irritation of the mucous membrane of the bowels, attended with muddy or reddish watery stools, and a tender, swollen and tympanitic state of the abdomen. Two or three alvine evacuations, in the course of twenty four hours, are sufficient to prevent any injurious accumulation of acrid or vitiated secretions. After the disease has continued for two or three days, and the fæculent contents of the intestines have been well evacuated, the milder purgatives, only, ought to be employed, in the way mentioned above. If these do not procure sufficient discharges, their operation on the bowels ought to be assisted by active clysters.

If in the commencement of the fever, the pulse is full, active and firm, more especially, when the child is of a robust and plethoric habit, or when there are decided indications of strong sanguineous congestion, and irritation in the brain, blood ought to be abstracted, either with the lancet or by leeching. Even in the advanced stages of the disease, blood-letting may sometimes be resorted to with much advantage, when the head is much affected and the pulse is still active and tense. If, after the disease has continued for five or six days, the pulse continues to be full and pretty active during the exacerbations, the abstraction of three or four ounces of blood, seldom fails to make a favorable impression on the disease. When strong delirium or a state of stupor supervene, and the momentum of the general circulation has been moderated, much benefit may occasionally be derived from leeching behind the ears or on the temples. In general, however, more advantage may be obtained, under these circumstances, from cold applications to the head, than from local depletion. I have frequently known, the symptoms of cerebral irritation and congestion in cases of this kind, speedily and very greatly moderated by the continued application of cold water or ice to the top and forepart of the head. If the feet are cool, which, in the latter period of the disease is sometimes the case, they ought to be excited by stimulating frictions or by warm applications, at the same time that cold is applied to the head.

Besides the remedies already mentioned, diaphoretics also, are very useful means for reducing the febrile reaction. The skin is generally obstinately dry and very hot; and a free action of the cutaneous exhalents is almost invariably attended with obvious abatement of the general febrile irritation. A simple solution of tartar emetic in water, or the antimonial wine, given in small but repeated doses so as to keep up a slight degree of nausea, will frequently do considerable good. I have often employed the following mixtures with unequivocal benefit.* To a child of from three to six years old a dessert spoonful should be given every two hours during the exacerbations of the fever. A mixture of spirit.

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* ℞ Nitrat potassæ ℈ii; pulv. extract. glycyrrh. ʒii; tart. antimonii, gr. i; spirit. nit. dulc. ʒii; aq. fontanæ ℥iv. M. ft.

℞ Muriat. ammon. ʒi; or pulv. extract. glycyrrh. ʒiii; vin. antimon. ʒii; aq. fontanæ ℥iv. M. ft.

menderiri, and the sweet spirits of nitre, in the proportion of an ounce of the former to a drachm of the latter, and sweetened with lemon syrup, forms also an excellent diaphoretic, in this complaint. One or two teaspoonfuls should be given, every two or three hours, according to the age of the patient. If, after the violence of the febrile reaction has been moderated, the brain continues to be in an irritated or congested condition, that is, if much delirium or stupor be present, blisters applied to the back of the neck, at the same time, that cold applications are made to the head, will sometimes procure very considerable relief.

It is often very difficult to determine whether the manifestations of cerebral disturbance arise from incipient inflammation, or from mere sympathetic irritation of the brain. If the former be the case, opiates, are of course wholly inadmissible; but, in instances of the latter condition, they often produce a highly salutary effect. In general, when at an advanced period of the disease, the delirium and cerebral disturbance is associated with a small, frequent and feeble pulse, a pale and sunken countenance, great jactitation and cool hands and feet, and especially when with these symptoms the patient can be roused from his stupor or delirium, opium may be employed with a prospect of much advantage. The best mode of using this narcotic is in the form of Dover's powder, in union with small portions of calomel. I have in some instances derived very great benefit from the administration of this remedy, in grain doses repeated every three or four hours. When the cerebral disturbance is entirely irritative and symptomatic of gastro-intestinal irritation, the pulse becomes softer and slower, the skin moist and of a natural temperature, and the patient falls into an easy and sound sleep, as soon as the system is under the influence of the opium. When he awakens his mind is usually much tranquillized, and the whole aspect of the disease is sometimes changed for the better. In the latter period of the disease, when the fever is about subsiding, the patient, though not distinctly delirious, is occasionally extremely restless, and unable to obtain any sleep during the night. In instances of this kind, two or three grains of Dover's powder, given in the evening, generally produces a very soothing effect. It must be particularly observed however, that, although often highly beneficial in the advanced periods of the disease, opium can very rarely be employed at an early stage, or before the febrile reaction has been considerably moderated by evacuants without incurring much risk of serious injury. In feeble and sickly children, I have occasionally administered a few grains of this anodyne, after the free operation of a purge, with evident advantage, at an early period of the complaint. In these cases, however, the face was not flushed and the patient was very restless instead of drowsy, as is usually the case, during the exacerbations.

When the abdomen becomes tumid and tender to pressure, the application of a few leeches to the epigastrium generally produces a very good effect. A large emolient poultice laid over the whole abdomen, may also be resorted to, with much advantage in cases of this kind. The abdominal tumor in such cases, arises from flatulent distention of the bowels; and hence the expulsion of the confined flatus, frequently affords immediate relief. For this purpose injections of a watery solution of assafœtida, may sometimes be used with considerable benefit; but the remedy which has most frequently succeeded, in my hands, in reducing the abdominal distention, is the spirits of turpentine, administered internally, in doses of from eight to twelve drops three or four times daily. In very protracted cases, when the system is much prostrated and the bowels are in an irritated and tympanitic condition this article is indeed a very excellent remedy. It not only excites the bowels to contract, and to expel the confined wind, but it often exerts an evident beneficial influence on the intestinal secretions, and, it would seem, on the irritation of the mucous membrane of the stomach and bowels.

After the disease has been in a great measure subdued and the alvine evacuations have acquired a natural appearance, mild tonics may sometimes be used with considerable benefit, during convalescence. A weak infusion of bark, or of colombo, will answer well for this purpose. I have in several instances used finely powdered charcoal, in union with powdered ginger, with very obvious benefit. From ten to fifteen grains of the former, to six or eight grains of the latter article, may be given three or four times daily.

The diet ought to be of the lightest and most unirritating kind possible. During the active stages of the disease, toast water, thin barley water, or rice water, will be sufficient. Every kind of solid food must be rigidly prohibited. For drink, the patient may use weak lemonade, toast water, and occasionally a table spoonful or two, of fresh water. During convalescence, chicken, lamb, or mutton broth, boiled rice, arrow root &c. will be proper.

CHAPTER XXV.

CATARRH. CATARRHAL FEVER.

Catarrhal affections under various forms and grades of violence, are among the most common diseases of infancy and childhood. These complaints are particularly apt to occur during raw, variable, and humid weather, and hence they are most frequently met with in the spring and winter, more especially when the latter season is moist and open. It is also, apt to occur during summer, when after a long spell of damp and clear weather, the atmosphere suddenly becomes dry and very hot. Catarrhal fever sometimes prevails epidemically, and the disease has been known to confine itself, in a great measure, to children. An epidemic of this kind occurred throughout the eastern states in 1824, in which by far the greater number of cases were among children.

This malady is characterized by fever, cough, slight hoarseness, some difficulty of breathing, running at the nose, sneezing, and that peculiar watery appearance of the eyes which occurs in the commencement of measles. The disease begins with a slight feeling of chilliness, and occasionally with a distinctly formed chill. The hands and feet become cold, the whole surface of the body pale and contracted, and the patient appears languid and drowsy. This state of depression frequently continues for a whole day before the febrile reaction is fully developed. In many instances, however, the fever supervenes in a very short time after the first feelings of indisposition. The patient complains of aching pains in the extremities and back, the pulse becomes frequent, somewhat tense and generally full, the cheeks flushed, the eyes suffused with tears, and a thin transparent fluid usually issues from the nose attended in the commencement with frequent sneezing. The skin is dry and husky, though seldom much above the natural temperature. The bowels are torpid, and the urine scanty and high-colored; and, in many instances the alvine evacuations, during the first few days, manifest a deficient secretion, and sometimes an entire absence of bile. In some cases, cough with slight hoarseness, is one of the earliest symptoms; more frequently, however, the cough does not come on until the fever is fully developed, and often not until the disease has continued for two or three days. The breathing is not often much oppressed in the early periods of the disease, though frequently attended with considerable rattling in the trachea. In severe cases, however, respiration is frequently difficult and wheezing, almost as soon as the fever is developed, owing to the abundant secretion of mucus into the air cells. This is most apt to be the case in infants, who, from not making any efforts to relieve the lungs by expectoration, suffer the bronchial secretions to accumulate, in the air passages. Hence the operation of an emetic, or spontaneous vomiting, by expelling the mucus from the bronchia, is always followed by an immediate, though but temporary cessation of the pectoral oppression and dyspnœa. In general, the more violent the cough is in the early stage of the disease, the less mucus is secreted and discharged from the lungs; and when the bronchial irritation is about passing into inflammation, the cough, usually, becomes perfectly dry. In the ordinary form and course of the disease, the expectoration becomes very abundant, after the fever has continued for three or four days; and as the copious secretion of mucus keeps up a constant irritation of the bronchia, the cough, usually becomes very frequent as the disease advances.

The liver, often, is much affected in this variety of fever. In infants, the epigastrium and right hypochondrium, sometimes, become tumid, tense and sore to pressure—a condition, which has led to the vulgar notion that the child is "liver grown," as it is called. The liver, in cases of this kind, is evidently greatly engorged with blood, attended with more or less functional torpor. During the first two or three days, the discharges from the bowels are frequently whitish or clay-colored; but as the disease advances, an abundance of light-green or dark bile appears in the evacuations. In violent cases, delirium sometimes occurs, particularly in the afternoon and at night. There is generally a distinct remission of the febrile symptoms, in the morning, though usually of very short duration.

The occurrence of bile in the evacuations, if accompanied with a soft and moist skin, and a more copious secretion of urine, is almost always followed by a speedy declension of the disease. When, on the contrary, the alvine discharges become watery and muddy, or reddish, with shreds and flocculi of mucus, resembling the washings of flesh, attended, as these discharges almost invariably are, by a bloated or tympanitic state of the abdomen, and a very dry and harsh condition of the skin, the worst consequences are to be apprehended. When death takes place, at an early period, it is generally from engorgement of the lungs and sudden effusion into the air cells, or from the supervention of bronchial or pneumonic inflammation. The occurrence of convulsions, in this complaint, is always a highly unfavorable circumstance. Great somnolency or drowsiness, when attended with difficult breathing, is also very unfavorable, as they indicate strong cerebral and pulmonary congestions.

During the declension of the disease, a very copious discharge of thick mucus generally occurs from the nose, and trachea; and this, with the cough, often continues for several weeks after the fever has completely subsided.

Treatment.—In prescribing for this disease, we must endeavor to restore the regular action of the skin and liver; to moderate the febrile excitement of the heart and arteries; to allay the irritation of the mucous membrane of the respiratory passages, and to obviate local congestions or inflammations. The bowels should, in the first place, be freely evacuated, by a full dose of calomel, followed, in three or four hours, by a dose of castor oil, magnesia, or infusion of senna and manna.

If the pulse is full and active, or when symptoms of severe pulmonary congestion or inflammation occur, blood ought to be drawn, so as to make an obvious impression on the circulation, either with the lancet or by leeching. When the child complains of pain in the chest, or when the breathing is laborious, this measure is of great importance, and should never be neglected. In many cases, however, the pectoral symptoms are slight and the pulse is not sufficiently active to require or warrant the abstraction of blood. As soon as the bowels have been well evacuated, recourse should be had to antimonials, and to small doses of calomel in union with ipecacuanna, with a view of exciting the cutaneous and hepatic secretions and keeping up a moderate action of the bowels. From a quarter to a half a grain of calomel, with a half a grain or a grain of ipecacuanna, according to the age of the patient, may be given three or four times daily, until the stools have become distinctly bilious. When this occurs, a dose of castor-oil, or of magnesia should be administered, so as to procure pretty free purging. At the same time that this remedy is employed, small doses of tartar emetic may be very beneficially administered. The best way, perhaps, of employing antimony in this disease, is to give it in combination with some mild expectorant mixture. I have found the following, very excellent mixtures for this purpose.* A teaspoonful may be given to an infant every two or three hours. After the febrile reaction has been moderated, or where it is feeble in the early stage of the complaint, much benefit will often result from the use of small doses of Dover's powder. Where however, the lungs are much oppressed, by too copious a secretion of bronchial mucus, and the patient appears drowsy, opiates are decidedly improper in infants; for, if the bronchial irritation is lulled by the use of opium, the cough will be suspended, and suffer the mucus to accumulate to a dangerous extent in the air cells and bronchia. When the breathing is oppressed from this cause in infants, nothing affords more certain and speedy relief than the operation of an emetic. The concussive action of vomiting, rarely fails to free the lungs from the viscid mucus, that may be lodged in the bronchia and air cells. When the pectoral oppression is severe, a large emolient poultice laid over the breast, will, frequently, procure considerable relief; but when the cough is violent and painful, and the breathing laborious, a blister applied to the chest will be the most effectual means of relief and ought not to be neglected. To promote the action of the cutaneous exhalents, the warm bath is sometimes very beneficial, particularly after the acute symptoms have, in some degree, subsided. During the declension of the disease, expectorants and small doses of opiate remedies, are usually of essential service. A mixture of equal parts of tinct. opii. camphoratæ, syrup of squills, and sweet spirits of nitre, forms an excellent remedy for this purpose. From twenty to sixty drops, according to the age of the patient, should be given three or four times daily. The hive syrup, and brown mixture,* are also very useful expectorants, in the latter stage of the disease.

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* ℞. Muriate of ammonia, ℈ii; Extract. Glycyrrh. ʒiii; Aq. fontanæ, ℥iii; Tart. Antimonii, grs. ii; Syrup. Scillæ, ʒiii. M.

or

℞. Spirit. Mindereri, ʒii; Syrup. Scillæ, ℥ss; Vin. Antimonii, ʒii; Spirit. Nitr. Dulc. ʒiii; Sacch. Albi ℥ss. M.

Congestive Catarrhal Fever.—Infants are liable to a catarrhal affection, in which the prominent symptoms are those of violent pulmonary congestion, with but little or no development of febrile excitement. So far as I know, Dr. Parrish, of Philadelphia, is the first, who has given a particular account of this dangerous malady.† This modification of the disease commences with cough, and the breathing soon becomes laborious and wheezing; the face is very pale, and the whole surface cold, though generally soft or moist. The pulse is considerably accelerated, but is free from tension, quickness, or firmness. The countenance acquires a peculiar expression of distress and anxiety, and in severe cases, the cheeks become very cold even when the other parts of the surface, are of a natural temperature. The stomach and bowels are generally inactive, and the urine is small in quantity, but so far as I have observed, nearly of a natural or healthy color. After the disease has continued for some time, a cold perspiration sometimes breaks out on the face and neck. The cough is at first dry, attended with a wheezing sound in the chest; but towards the termination of the complaint, it frequently becomes humid or rattling. The pulse, in violent cases, becomes very small and rapid, and the tendency to sinking, is in all instances, very obvious. There is constantly much difficulty of breathing, but at times, the oppression becomes so great as to resemble a violent attack of asthma. Occasionally considerable remissions occur, for a short period, during which the pulse will become somewhat fuller and slower, and the countenance brighter and more calm. When the disease is tending to a fatal termination, the patient becomes drowsy, insensible and comatose, and death takes place, by suffocation, or in a paroxysm of convulsions.

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* ℞. Extract. glycyrrh. ʒii; Aq. fontanæ ℥iv; Vin. Antimonii ʒii; Tinct. Opii. Camph. ʒii. M. Dose from one to two teaspoonfuls every three or four hours, according to the age of the child.

† Observations on a peculiar Catarrhal Complaint in children. By Joseph Parrish, M. D. &c.—See, North American Medical and Surgical Journal. vol. i. p. 24.

This disease seldom continues longer than two or three days, and in very young infants, death sometimes takes place, in the course of the first day. It is most frequently met with in infants under a year old, and I have witnessed several cases during the first month. After dentition is completed, catarrhal affections appear to be less apt to assume this congestive character; although violent pulmonary congestion and fatal effusion into the air passages, occur at every period of life as consequences of pneumonia or bronchial inflammation.

Dr. Parrish thinks that the dyspnœa, which forms the prominent symptom of the disease, "is undoubtedly of a spasmodic character," depending probably on "a constitutional debility of the respiratory organs." My own observations have led me to a very different conclusion. From carefully attending to the phenomena and progress of several cases of this kind, I am entirely convinced, that the oppressed respiration and other characteristic symptoms of this disease, depend mainly if not wholly on great sanguineous engorgement of the pulmonary blood-vessels. The disease is manifestly catarrhal; but the lungs are, at once, so entirely oppressed by excessive sanguineous congestion, that the vital energies are too much depressed to admit of the development of distinct febrile reaction, and local inflammation. It seems to me to bear the same relation to acute bronchitis or peripneumony, that apoplexy or coma does to phrenitis. It is a kind of apoplexy of the lungs. Extremely oppressed respiration, paleness of countenance, cough, and coolness of the surface, are precisely the phenomena we should expect to occur, from excessive sanguineous engorgement of the lungs. Dr. Parrish uses antispasmodics, particularly assafœtida and the oil of amber in the treatment of this malady; and he seems to regard their apparent usefulness, as an evidence of the correctness of his opinion on this subject—namely, that the "dyspnœa is undoubtedly of a spasmodic character." It must be observed, however, that he employs, also, emetics, purgatives, blisters to the breast, and the warm bath; and although he regards them only as "useful auxiliaries" to the assafœtida and oil of amber, they are just such remedies, as one would place most reliance on for the removal of pulmonary congestion; and I cannot doubt that they were in reality the means which effected the beneficial results in the cases he has reported.

Treatment.—The principal object in the treatment of this complaint, is to relieve the congested condition of the lungs, and to prevent the development of inflammation. The child should be immediately placed in a warm bath, and an antimonial emetic administered. Vomiting seldom fails to procure some benefit: but the relief obtained from it, is generally temporary, and in the beginning of the disease, sometimes but very slight. The most effectual means for relieving the lungs, is the application of a large epispastic over the breast, and this should never be omitted when the pectoral oppression is severe. The bowels, also should be freely evacuated; and for this purpose, a full dose of calomel is, perhaps, the most beneficial. Frequent and very active purging, however, has appeared to me injurious in this complaint. After the intestines have, in the first place, been well evacuated, it will, I think, be best to keep them in a loose state, by the exhibition of a moderate dose of calomel in the evening, assisted if necessary, next morning, by a small portion of castor oil. To determine the circulation to the inferior parts of the body, some advantage may also be derived from the application of sinapisms to the feet. Dr. Parrish speaks very favorably of the use of assafœtida and the oil of amber. He mentions an extreme and an apparently hopeless case, the unexpected recovery of which he ascribes chiefly to the agency of the former of these antispasmodics. "I should," he says, "have despaired of the case, had I not known under what apparently hopeless circumstances infants sometimes recover. I ordered the warm bath, sinapisms to the feet, a large blister over the breast, and laxative injections containing assafœtida. But the remedy on which I chiefly relied, was assafœtida rubbed up with mint water, given frequently and in large doses. To the astonishment of every one who witnessed the case, my little patient perfectly recovered." The assafœtida, doubtless, had its share in the production of this fortunate result; but this case certainly cannot be regarded as a fair example of its efficacy, since the other means employed along with it, are by themselves, generally, sufficient to remove the disease. I have never yet employed any antispasmodics in the treatment of this affection—having always relied, principally, on the remedies already mentioned, particularly blistering, the warm bath, and emetics. When the pulse is very feeble, wine-whey, or a weak solution of the carbonate of ammonia may be used with much advantage. I would not, however, say any thing against the free employment of assafœtida; on the contrary, the authority of Dr. Parrish, is sufficient to convince me, that it is a remedy of excellent powers in this complaint. I doubt, however, whether its good effects can be justly ascribed to its antispasmodic operation. It is rather by a general stimulant and expectorant influence, I conceive, that it contributes to the reduction of this formidable malady. Dr. P. directs, that one drachm of this gum, be rubbed up with an ounce of mint-water, and given in teaspoonful doses, repeated every two hours. "If this shall be found too strong, it should be diluted, till of such a strength as the child can bear."

I have as yet said nothing of blood-letting. When there is considerable fulness and activity in the pulse, the abstraction of a small quantity of blood, with the lancet, is often highly beneficial. I have, in some instances, procured prompt and very decided relief by bleeding. When the pulse is very frequent, small, and feeble, as it sometimes is, blood cannot be drawn without considerable risk of increasing the prostration to a fatal extent. Before bleeding is resorted to, where the state of the pulse does not distinctly indicate the propriety of the measure, it will, in general, be best to premise the use of the warm bath, and the application of sinapisms to the feet. If these do not, in some degree, increase the fulness and force of the pulse, it will be most prudent to abstain from drawing blood.

In moderate cases, I have known very obvious benefit to result from the application of a large emolient poultice, renewed every two or three hours, so as to keep it sufficiently warm and moist.

When the bronchial exhalents begin to relieve themselves, by secreting an abundance of mucus; or when the respiration and cough are attended with a rattling sound in the chest, the hive syrup, or a decoction of the seneca root, repeated at short intervals, until vomiting is produced, will sometimes procure very considerable relief. Opiates are, in general, decidedly improper in this affection, particularly in very young infants, and when the secretion of bronchial mucus is copious. Dr. Parrish, says tha• the fumes of rosin "are often highly beneficial." I have my self, in one instance, resorted to the inhalation of these fumes with an evidently beneficial effect on the breathing.

[The disease here described would often be called bronchitis, and I have no doubt that it is the immediate preliminary to that disease, pathologically considered. The state of the pulse and general system should decide in respect of the use of the lancet, or local bleeding. Of the propriety of emetics, there can be no doubt; and they might be advantageously repeated. They relax, as well as deplete. They prepare the way for the exhibition of the milk of assafœtida, so highly praised, and so justly, too, by Dr. Parrish. Any parent can make it, by rubbing a lump of the fœtid gum, as large as a nutmeg, in a teacupful of hot water, until dissolved. The solution may be given frequently, in the dose of a teaspoonful.]

CHAPTER XXVI.

ACUTE BRONCHITIS.

This disease as it occurs in infants, often bears a close resemblance, in its early stage, to the congestive complaint described in the preceding section. They are, indeed, produced by the same cause; but in the present disease along with the sanguineous engorgement of the lungs, more or less inflammation, is developed in the mucous membrane of the bronchia.

The disease usually begins, with chilliness, or a cold and contracted state of the surface, a languid and pale appearance of the countenance, slight cough, and some difficulty of breathing. After some time, the pulse becomes frequent, quick somewhat full and resisting. The cough increases, is slightly hoarse, and has a stifled sound. The breathing also, rapidly becomes more and more oppressed and laborious. When the child is old enough to give an account of its sensations, it complains of a feeling of weight and tightness in the breast, but seldom of any pain. Nevertheless, when the cough is violent, infants sometimes cry out, as if from pain; and the inspirations are occasionally catching and attended with an expression of pain in the countenance. At first the breathing and cough are dry, but in the course of the first twelve hours, and often soon after the commencement of the febrile reaction, a copious secretion of transparent, viscid mucus takes place, into the bronchia. In most instances, vomiting occurs during the first twenty-four hours; and the epigastrium frequently becomes distended and elastic. As the disease advances, the mucous secretion into the air cells and bronchia, increases progressively; the child becomes drowsy, the lips livid, and the countenance expressive of great distress, the muscular debility is always very great. When the disease is once fully developed, the child often manifests much uneasiness by being placed in the recumbent position. The countenance is very rarely, even slightly, flushed; on the contrary, throughout the whole disease, it is almost invariably extremely pale and anxious. Towards the fatal termination, the cheeks and lips sometimes acquire a slightly livid hue. The temperature of this surface, is generally somewhat above the natural standard, on the trunk,—but the hands and feet, are frequently cool or about the regular temperature. The difficulty of respiration, is not uniform. Occasionally it is pretty easy, for a short period, and then suddenly, becomes, extremely oppressed. The cough too, after the disease has continued, until the secretion of bronchial mucus is very copious, becomes, in a manner, paroxysmal—violent spells coming on at irregular, and generally short periods, with comparative exemption from it, during the intervals.

The progress of the disease, is generally rapid. In some instances it terminates fatally as early as the third day; more frequently, however, its course is protracted to the sixth day. Great drowsiness or coma, almost invariably precedes the fatal termination But even after the lungs appear to be completely clogged with the effused mucus, and the child has sunk into a comatose state, "gleams of hope sometimes burst upon us. For a short time the difficulty of respiration may seem to subside, and the child to be better. But these hopes are very rarely realized; for even the next exacerbation of dyspnœa may terminate in suffocation."

On dissection the lungs do not collapse when the thorax is opened. The whole structure of the lungs, usually appears, infiltrated, or engorged with a thin viscid fluid. The mucous membrane of the bronchia, is generally of a bright red color, from minute injection of its capillary vessels. The smaller branches of the bronchia, are commonly filled with tough mucus, bloody serum, or purulent matter. In those cases that succeed pustular exanthematous affections, the mucous membrane of the large bronchial tubes, sometimes presents a number of very small ulcerations, and slight fungoid elevations. In severe cases, it is not uncommon to meet with a red hepatized condition, of a portion of the lungs; and occasionally there is an approach towards the formation of tubercles.

The great muscular prostration and somnolent condition which occur in this disease, doubtless, arise from deficient decarbonization of the blood; for death generally occurs from asphyxia, or suffocation, in consequence of the entire obstruction of the air cells, and smaller bronchial branches, by the viscid mucus so copiously secreted in this affection. It seems probable, however that death sometimes occurs, also in consequence of the inflamed mucous membrane preventing the atmospheric air from producing the necessary change in the veinous blood. Cases of fatal dyspnœa are related by M. Andral, jr. in which no effusion or redundant secretion of mucus had taken place, nor any lesion of the proper substance of the lungs, discovered on dissection. It seems highly probable, that, whether the oxygen enter into the blood-vessels, or the carbon be thrown out through the mucous membrane, the regular influence of the air, on the veinous blood, will be impeded or perverted when this delicate structure is in a state of intense inflammation. The difficulty of respiration which occurs in the early stage of this complaint, is, perhaps, chiefly attributable to this cause, and not to the clogging of the bronchial cells, by viscid secretions, as is generally supposed.

Treatment.—Blood-letting is in general a highly valuable means of relief, in the early stage of this affection. In robust and plethoric infants, particularly when the pulse is active, prompt and efficient, bleeding, either with the lancet or by leeching, may be deemed indispensable. The period, however, during which this measure may be resorted to with a prospect of advantage is not very long. The blood ought to be abstracted at an early period —as soon after the inflammation is developed, as possible. If it be delayed, until effusion or a copious secretion of bronchial mucus has taken place, the chance of benefit from it, will be but very small, and injury, probably, will be the result. If the cough is dry, and the respiration not attended with a rattling sound in the trachea, blood may be drawn, with a fair prospect of advantage; and a sufficient quantity ought to be taken away, at the first bleeding, to make an obvious impression on the action of the heart and arteries. Much benefit may be derived from the application of leeches to the chest; more especially, after blood has been abstracted with the lancet. No remedy, however, contributes more powerfully to the reduction of the bronchial inflammation than blistering. As soon as blood has been efficiently abstracted or at once in the very commencement of the disease if the pulse be small and feeble, a large epispastic ought to be laid over the breast and suffered to remain until the skin is uniformly inflamed. It must then be removed and a large emolient poultice laid over the part.

The bowels should be freely evacuated, by a full dose of calomel and rhubarb; and afterwards kept in a loose state by purgative enemata, and small doses of some of the milder laxatives. Half a grain of calomel with the same quantity of ipecacuanna may be advantageously used for this purpose. Emetics also are very useful remedies, in this affection. They generally procure immediate relief of the oppression in the chest, by expelling the viscid mucus which clogs the bronchial cells, and diminishing the pulmonary congestion. A mixture of antimonial wine and syrup of squills, in the proportion of one part of the former to three parts of the latter, forms an excellent emetic, for this purpose. A teaspoonful of this mixture should be given every twenty minutes, until active vomiting is excited. Expectorants may also be used with advantage in this affection. In the early period of the disease, the more stimulating articles of this kind must be avoided. I have frequently employed the following mixture, for this purpose, with evident benefit.* After the febrile reaction has been moderated and there is much secretion into the bronchia, the more stimulating expectorants, will be proper. The following combination, frequently, produces a very good effect, in the advanced periods of the disease.† When there is much prostration, or when the pulse is small and feeble, in the latter stage of the disease, stimulants should be used, along with expectorants. The carbonate of ammonia is an excellent remedy in this state of the disease. It may be given according to this formula.* Hoffman declares, that he has known a combination of the flowers of benzoin and camphor, to procure complete relief, in cases, apparently hopeless. To an infant, of from one to three years old, a quarter of a grain of the former article with half a grain of the latter, rubbed up with a small portion of sugar, may be given every two hours.

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* ℞. Tart. antimonii. gr. ii; sal. tart. ʒii; aq. fontanæ ℥iiss mel. opt. ℥iss. M. Dose, a tea spoonful every hour or two.

† ℞. G. ammoniæ ℈ii; infusio polygala senegæ ʒiv; syrup scillæ ℥ss. Dose, a teaspoonful, every two hours.

Opium is seldom beneficial in this disease; and may readily do a great deal of harm, by suspending, for a time, the efforts to expectorate, and thus giving rise to a dangerous accumulation of mucus in the bronchial tubes. When the cough remains dry, (which however, is rarely the case) and the momentum of the circulation has been diminished by depletion, considerable benefit may be derived from the judicious employment of this narcotic. In such cases, small doses of Dover's powder, in union with calomel, generally moderate the violence of the cough, and assist expectoration. To allay general irritation, and restlessness, during the declension of the disease, the tincture of hyoscyamus or of belladonna is often very useful. Exhibited in doses of from two to four drops every four hours, it seldom fails to tranquillize the nervous system, and to moderate the cough. When the skin is slow in resuming its regular perspiratory action, these narcotic tinctures may be very beneficially given in union with antimonial wine.

[As some physicians have objected, very pertinaciously, to the use of blisters in the diseases of infants, and as I regard them, subsequently to leeching, as vastly important in the management of acute bronchitis, this note is added to enforce the propriety of epispastics, as well as their entire safety. I have applied them to infants only three months old, and with results that could not be had from any other means, and with no sort of untoward contingency. Applied high up on the chest, they are too near to the centre of circulation to induce gangrene; and if febrile action be first abated by suitable depletants, they will exert a benign influence. The raw surface, so formed, presents a convenient inlet for the introduction of active agents into the system. I have never known the remedy to act injuriously, when wisely applied; in other words, when the system was neither too much excited nor too much depressed.]

* ℞. Carbon. ammon. ℈ii; ext. glycyrrh. ʒii; aq. fontanæ, ℥iv, acid. scillæ ℥ii. M. Dose, a tea spoonful every hour or two.

CHAPTER XXVII.

PLEURITIS.

INFLAMMATION of the pleura is a much more common affection, during infancy than many suppose.* It commences as other inflammatory affections do, with a feeling of chilliness and a pale and contracted state of the surface. This is soon succeeded by high febrile reaction. The skin becomes very dry and warm, the face flushed, and the pulse frequent, full and strong. The breathing is hurried, short and somewhat oppressed, particularly when the patient is lying down. The cough is at first dry and short, and the infant evidently endeavours to stifle it as much as possible, to avoid the pain which it always occasions. When the child is laid down, it generally begins to cough and cry, and the muscles of its countenance are contracted into an expression of pain and suffering. There is also much more cough and uneasiness, when the patient lies on one side than on the other. In some instances, the patient rests easiest when lying on his back, with the head and shoulders raised, both sides being equally affected. Sometimes each inspiration is attended with a whine or moan, and the countenance is always expressive of pain. If the disease is not early moderated, or checked in its course, the breathing becomes more and more difficult and painful; and if any of the viscid bronchial mucus is thrown out, it is frequently found streaked with blood. "The cough is attended with a rattling sound in the trachea; the extremities become cold; the countenance often slightly livid, and the patient finally sinks into a state of drowsiness or stupor. The pulse, at last, becomes irregular, and often intermittent, the extremities swell, the breathing becomes short, and a frothy fluid oozes from the mouth." During the whole course of the disease the respiration is performed, chiefly by the action of the abdominal muscles, and diaphragm—the motion of the chest being instinctively restrained by the patient, on account of the increase of pain which the dilatation of the thorax or elevation of the ribs always occasion in the inflamed pleura.

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* Dr. Burns.

On post mortem examination, the pleura is generally found uniformly red, or punctuated with an infinitude of red specks of irregular shape, and very close together. In many cases a considerable quantity of serum is effused into the cavity of the pleura; and adhesions, more or less extensive, between the costal and pulmonary pleura occur in the majority of instances. Occasionally, some portions of the lungs are found hepatized; and a general infiltration of serum into the pulmonary structure is not uncommon.

The occurrence of diarrhœa in this disease, is always an extremely unfavorable circumstance; convulsions and coma, too, are no less ominous of a fatal tendency. Great distress and agitation, when placed in recumbent position, particularly when the breathing is attended with a wheezing sound in the trachea, and the pulse is small and irregular are extremely unfavorable signs. When the skin becomes uniformly moist, the pulse less frequent and soft, the cough attended with a free discharge or raising of bronchial mucus, and the patient is able to rest on either side, a favorable termination may be confidently expected.

Treatment.—Prompt and very efficient blood-letting is indispensable in the treatment of this form of pectoral inflammation. Blood should be freely drawn with the lancet, until a decided impression is made on the pulse. The early application of leeches to the chest is also a highly important measure. As soon as the momentum of the circulation has been moderated, a blister ought to be laid over the breast, and managed in the way mentioned in the preceding chapter. The bowels must in the first place be freely evacuated, by an efficient dose of calomel and rhubarb, and kept in a loose state throughout the whole course of the disease, by small doses of calomel and ipecacuanna, or suitable portions of epsom salts.

The cooling diaphoretics are very useful auxiliary remedies in this affection. The nitrate of potash with minute portions of antimony generally contributes materially to the reduction of the febrile irritation. The following is an excellent mixture for this purpose.* Small doses of the pulvis antimonialis, in union with calomel, may also be employed, with much advantage, when the skin is very dry and warm. With the view both of diminishing the action of the heart and arteries, and of promoting expectoration, a simple solution of tartar emetic, given in very small but frequent doses, often proves decidedly beneficial. Dr. Burns says, that antimonials ought never to be given, in this complaint, to the extent of producing "decided sickness." I have witnessed no evil consequences from nauseating doses of tart. emetic, in the present disease, but, on the contrary, often unequivocal benefit. I have generally made it a point to administer this article so as to produce slight manifestations of nausea; and I am persuaded, that in the early stage of the disease, while the pulse is active and the skin hot and dry, much advantage will in general, result, from this mode of employing antimony. As a diaphoretic expectorant, the *kermes mineral*, given according to the formula below,† sometimes produce a very good effect, particularly when the cough is dry and harsh. If after the disease has been in a great degree subdued, the cough continues to be very severe, and the patient is restless, considerable benefit may sometimes be obtained from the use of small doses of Dover's powder. A few grains administered, once or twice daily, usually has the effect, of improving the expectoration, allaying the pain and restlessness, and exciting the regular action of the cutaneous exhalents. This article is particularly useful, during convalescence from this and other forms of pectoral inflammation, more especially when the pulse is small, and irritated and the skin dry. In the advanced stages of the disease, when (although the local inflammation and fever, appear to be almost entirely subdued,) the child is incapable of resting in a recumbent posture, the employment of diuretic remedies is sometimes attended with marked benefit. In cases of this kind there is often a considerable quantity of serum effused into the cavity of the pleura, so that the moment the child is laid down, with its head low, it becomes agitated and begins to cough, pant, and cry. To promote the absorption of the effused fluid, small doses of squill and calomel, ought to be given three or four times daily, until the child is able to sleep in a horizontal position. The fourth of a grain of dried squills with the same quantity of calomel forms a full dose for a child, of from one to three years old. A mixture of the tincture of digitalis and vinegar of squills, in equal quantities, may also be used for tnis purpose; and I have known much benefit to result in this respect, from a mixture of equal portions of the syrup of squills and the sweet spirits of nitre, given in doses of from twenty to thirty drops three or four times in the course of a day. When after the pleuritic symptoms have been removed, the child continues to be affected with cough, and a short and uneasy respiration, no remedy has appeared to me so valuable as the *tincture of sanguinaria Canadensis.* I have rarely known it to fail in removing the pulmonary irritation in such cases. From two to four drops may be given three times daily to a child under three years old.

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* Nitrat. potassæ, ℈ii; extract. glycyrrh. ʒii; tart. antimonii gr. ii; sacch. albi. ℥ss; aq. fontanæ ℥iii. M. Dose, one or two teaspoonfuls, every hour or two, according to the age of the patient.

† Kermes mineralis gr. xv; extract. glycyrrh. ʒii; aq. fontanæ ℥iii.; syrup Scillæ ʒii. M. Dose, a teaspoonful every two or three hours.

[It is of great moment, after recovery from an attack of this disease, to guard the child from the vicissitudes of weather, so common when pleuritis is most prevalent. The pleura and the lungs are left in a delicate, excitable condition, and therefore need great care, to prevent a repetition of the disease, or the development of tubercle. The chest should be covered with flannel, and, as far as practicable, the child should enjoy the salutary action of an equable temperature, until the system regains its original vigour.

If there be a doubt that the diseased action has not been wholly removed, it will be safe to maintain a discharge from the surface, for several weeks, after the patient appears to be convalescent.]

CHAPTER XXVIII.

AROTITIS. MUMPS.

Parotitis is a specific inflammatory affection, particularly liable to be transferred to the testes in males and mammæ in females; propagated by a peculiar contagion, and occurring sometimes spasmodically.

Symptoms.—Slight febrile symptoms generally usher in the disease, which is first manifested by a feeling of stiffness about jaws, and a little tumor and pain in one or both parotid glands. The swelling in the beginning is moveable, but it soon becomes widely diffused, frequently involving the maxillary glands. It gradually increases until the fourth day, when the affected gland is very firm, tender and elastic to the touch. The skin over the tumor retains for the most part its natural hue, although in some instances it is changed to a pale red, and occasionally a bright red color. The maxillary glands, are sometimes more largely affected than the parotid. Mastication and deglutition are in all cases attended with considerable pain. The fever is in general mild, though the patient is frequently troubled with considerable restlessness and nervous irritability. The inflammation begins to decline about the fourth day, and very rarely tends to suppuration. The other inflammatory symptoms now likewise subside, and about the seventh day from the beginning of the disease, detumescence is complete. Diaphoresis, more or less general, and a red urinary deposition, usually accompany the subsidence of the affection.

Metastasis of the disease sometimes occurs upon the decline of the inflammatory symptoms. In females, the breasts, and in males, the testicles are apt to become hard, swollen and more or less painful to the touch. This symptom, according to some respectable writers, is rather favorable than otherwise; for sometimes where it has been absent, an exacerbation of the symptomatic fever has taken place, violent cerebral disturbance ensued, and death been the result. Dr. Hamilton relates several instances, in which, after considerable enlargement of the testicles, occurring upon the decline of the disease, this organ wasted entirely away, so that the tunica vaginialis became an empty sack. Improper exposure to cold, will sometimes cause a sudden transition of the affection to these parts, in which case, if the treatment be not judicious, suppuration may ensue—a very painful event and one that may terminate fatally. The same cause sometimes occasions a metastasis of the inflammation to the brain. Coma, or furious delirium now generally supervenes, and death usually follows in the course of a few hours. A case of this kind came under my notice, where in less than an hour, the patient expired in a paroxysm of convulsions. We must not forget that a metastasis of the disease to the mammæ or testes is no absolute security against a secondary translation of it to the brain.*

Children and young persons are most liable to the attacks of this complaint, its appearance in maturer life being very uncommon. It rarely affects the same individual more than once, resembling thus the other acute contagious diseases. Parotitis, occurring in advanced life, shows an aptitude at times to take on a chronic form, accompanied by very serious symptoms. This aptitude is most apt to occur in females in whom the menses are about ceasing, and whose general systems are in some measure deranged. Although suppuration is an uncommon termination in this complaint, it may yet under circumstances favoring it, take place.

With the exception just noted, Parotitis may be said to be neither a severe nor dangerous affection—particularly where the patient avoids exposure to low or variable temperature, and keeps the affected parts moderately and uniformly warm.

Treatment.—In mild cases, beside attending to the precautions just mentioned, little more is necessary than keeping the bowels open and using gentle diaphoretics. Sometimes the inflammatory symptoms run high, and we should then resort to active antiphlogistic measures. When the swelling disappears in the neck and shows itself in the testicles, blisters should be applied to the parotids, and every effort made to excite a general diaphoresis. A mild, cooling regimen is to be enjoined, and where the pain is extreme and the symptomatic fever severe, we must have recourse to full purging and sometimes to venesection. Emetics have occasionally been productive of much benefit in such cases. To discuss the hard tumefaction not unfrequently remaining after the disappearance of the inflammatory symptoms, frictions with mercurial ointment, spirits of camphor or rubefacient liniments should be used.

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* See history of an Endemic Parotitis, &c. Edinburgh Med. and Surg. Journ. Vol. 4, p. 304.

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* [It has fallen to my lot to see a very large number of cases of this disease, having passed through several epidemics of extensive prevalence. In my own practice, a case of metastasis has never occurred, although I have been consulted for that accident several times. From all that I have learned touching this subject, the conclusion has been forced, that metastasis is almost always induced by too active applications to the neck, with a view to reduce the swelling and abate the pain.

Very rarely have I found it necessary to bleed, the exhibition of calomel and ipecacuanha, followed by the spiritus mindereri, proving fully competent to meet the exigency. The best local application has been warm water, or the spt. mind., gently heated. The emeto-cathartic operates sufficiently on the stomach and bowels, and the spirit of mindererus, in doses of a teaspoon to a tablespoonful, being administered every half hour, insures a free action of the cutaneous exhalants. The febrile excitement being generally moderate, is easily reduced and kept in check by this treatment.

Never have I known an individual to be attacked the second time with this disease, if both sides of the neck were under its influence. I had a patient, some years ago, with a pretty severe attack on the left side, the right side alone having been affected a few years before. I have never known suppuration to occur, but in a single case, and regard it as a rare event.]

CHAPTER XXIX.

TONSILLITIS. CYNANCHE TONSILLARIS. QUINSY.

Inflammation of the tonsils and fauces, is a frequent complaint among children. It generally commences with a feeling of chilliness, accompanied with a huskiness of voice, an uneasy sensation in the fauces, and a stinging or cutting pain, in this part, on swallowing. More or less febrile reaction ensues; and in a few hours a fixed pain is experienced in the region of the tonsils, and the swallowing becomes more and more painful, until at last the action is productive of extreme anguish. On examination, one or both tonsils are found swollen, and the whole surface of the fauces present a tumid and florid aspect. In some instances, the uvula and soft palate, exhibit a highly œdematous and dark red appearance. The tongue is covered with a white fur, through which the florid and enlarged papillæ project; and over the whole, a thick layer of tough transparent slime is spread. In severe cases, the face becomes flushed and tumid; the carotids beat strongly; respiration is laborious, hearing obtuse, the pulse frequent, full, and hard, and the voice indistinct or whispering. In general, the patient swallows soft or pultaceous substances with more ease and less suffering, than liquids. Severe pains, usually dart from the fauces into the ears,—particularly when the patient attempts to speak or to swallow; and the mouth is opened with great difficulty and pain. The breathing is much obstructed by the extremely viscid mucus, which is so copiously secreted in the fauces; but in violent cases, the principal and most alarming source of difficult respiration is the enlargement of the tonsils; for when both are inflamed, they sometimes become so much swollen, as to come in contact with each other, confining the uvula behind them, or pressing it forward into the mouth.

In some instances flakes of coagulable lymph of a whitish color adhere to the inflamed tonsils, resembling superficial sloughs. In cases of this kind, the inflammation is always of a vivid red color, and its tendency is either to resolution or suppuration. Occasionally, however, the inflammation assumes more of an erysipelatous character, the affected parts exhibiting a dark livid, and œdematous appearance, with small aphthous ulcers of white or grey color on the tonsils and uvula. Instances of this kind, very rarely terminate in suppuration.

Inflammation in this disease terminates in resolution or suppuration,—gangrene hardly ever occurring, although at times a few sloughy spots are visible in the fauces. In no structure is abscess more frequently the result of inflammatory action, than in the tonsils. Internal suppuration will often take place in a few days, despite of the most active local and general antiphlogistic measures. The quantity of matter formed in a suppurated tonsil is seldom abundant: it is not often very perceptible in the sputa, a portion of it undoubtedly being commonly swallowed with the saliva. Occasionally the abscess has pointed and broken outwardly, under the angle of the jaw. Dodonæus relates a case, in which the patient appeared near death, where prompt relief was procured by an external incision in the abscess, and the consequent discharge of a large quantity of pus.

This disease is never contagious, and though for the most part violent in its character, it is of short duration. In some instances, the inflammation passes down into the larynx, an occurrence that always increases the risk from the affection. Where this disease occurs in the same individual more than once, a predisposition to it is apt to be established. Frequent attacks tend also to occasion permanent enlargement and induration of the tonsils. In cold and variable climates, it is a complaint of frequent occurrence; and although by no means so dangerous as anginose affections of the respiratory passages, it is much more painful, in violent cases always alarming, and sometimes fatal. The young and the sanguine are said to be particularly liable to its attacks.

Some individuals are peculiarly predisposed to this disease. This, as before observed, is especially the case with persons, who have suffered once or twice from its invasion. But other causes such as the constitutional influence of mercury, salivation and a strumous habit of body, appear to create or constitute a predisposition to the complaint.

Cold and damp air, or cold applied in any manner, so as to give a sudden check to the perspiration, is the ordinary exciting cause; and hence the frequency of its occurrence in spring and autumn, when vicissitudes and variable temperatures are most common. Standing or sitting long on cold and damp ground is particularly apt to give rise to the complaint, in those who are predisposed to it.

Treatment.—The treatment of this affection must, of course, be strictly antiphlogistic; and, it is of much importance that efficient means be employed as soon as the disease is noticed; for, even where the onset of the disease is mild, we have no security that its course will not be marked with extreme violence. When the pulse is full and active, blood ought to be promptly and efficiently drawn. In children, however, the febrile reaction is not often so vehement in the commencement of the disease, as to require a copious abstraction of blood; and in mild cases the inflammation may often be speedily subdued, with counter-irritating applications, purgatives, warm pediluvium, &c., without the aid of direct depletion. Nevertheless, blood-letting, when regulated according to the state of the pulse, is always a safe and useful measure, and should never be omitted when the symptoms do not readily yield to other appropriate means.

Purgatives are highly beneficial remedies in this affection. An active purge should be administered in the commencement of the treatment, and, repeated daily, until the inflammation is subdued, or has terminated in suppuration. For this purpose we may use five or six grains of calomel, followed in an hour or two by a suitable dose of epsom salts. I have known prompt and decided relief obtained from the use of the following emeto-cathartic mixture, given in doses of from a dessert to a table spoonful every hour, according to the age of the patient, until vomiting and purging was produced.[*] Diaphoretics, also, are useful auxiliaries, in the treatment of this affection. Nitre, in union with antimony, forms an excellent remedy for this purpose. Some advantage may be gained by causing the patient to place the nitre on his tongue, and swallow it as it is gradually dissolved in the mouth. Much benefit may in general be derived from nauseating doses of tartar emetic. Of two ounces of water, holding a grain of tart. antim. in solution, a teaspoonful is to be taken every thirty minutes, so as to keep up a considerable degree of nausea for several hours. I have frequently prescribed the medicine in this way with the happiest results. The muriate of ammonia, dissolved in water, with the extract of liquorice, has been particularly recommended.[†]

Emetics were once a good deal employed in tonsillitis, but their effects are much less beneficial in this, than in any of the other anginose affections. In infants, however, they are often highly beneficial, by removing the extremely viscid mucus which adheres to the palate, tonsils and fauces, and obstructs respiration.

Topical bleeding, by scarifying the tonsils, generally produces excellent effects. Kopp thinks, that blood drawn in this way from the tonsils, is the most certain, prompt and efficacious remedial measure we possess. The early application of leeches to the throat or under the ear, although of less value, perhaps, than scarification, should by no means be neglected. Cupping on the back of the neck and under the ears, may, also, be resorted to with advantage.

So soon as the momentum of the circulation has been reduced by venesection, a blister should be applied to the throat, or on the back of the neck. In slight cases of the disease, rubefacients, particularly the spirits of turpentine, or a liniment composed of two parts of aq. ammoniæ to one of sweet oil, will in general suffice. Emollient poultices are also very useful applications in mild cases. Employed in the commencement of the disease, together with warm pediluvium and a purgative, the further progress of the inflammation, will sometimes be speedily and effectually arrested. Three or four folds of thick flannel round the neck, in such instances, with the auxiliaries just mentioned, are often sufficient to prevent the developement of the malady. But in every case where inflammation is considerable, immediate recourse must be had to vesication.

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[*] ℞ Sulph. magnesiæ, ... ℥ss.
Aq. fontanæ, ... ℥viii.
Tart. antimonii, ... gr. i.

[†] Leoffler. Beitaegen Zur Arzn. Wissensch. 1. Th. Leips. 1791, p. 142.

The early use of astringent and acid gargles has been much recommended. Cullen advises a decoction of oak bark, with alum dissolved in it, as a useful prescription for this purpose. For myself, I generally prefer simple warm water, acidulated with vinegar. The principal advantage of gargles in this complaint would seem to be that of dissolving and removing the viscid mucus, adherent to the tonsils and palate; and this is best accomplished by warm water, either alone, or with a portion of some vegetable acid, and perhaps honey. Pringle says, that he never derived any benefit from astringent gargles, and according to Storch, they have at times been evidently injurious, by checking the exhalation and secretion from the mucous surface of the inflamed parts.

The inhalation of certain vapors by any simple machine, is one of the oldest remedies in this affection. The vapor of vinegar and water was used by Hippocrates.

If it is obvious that suppuration cannot be prevented, every proper measure should be taken to facilitate this termination. The steam of warm water, or of water impregnated with rosemary or chamomile leaves, should be inhaled, and astringent gargles should at once be discontinued. When the fluctuation and other symptoms indicate the formation of a tonsillar abscess, it should by all means be immediately pierced with a lancet; as the discharge of the matter will always give instant relief from the pain and difficulty of respiration. After the operation, the patient should continue for a little while, the use of some mild and slightly acidulated or astringent gargle.

Occasionally, from the extent and violence of the inflammation in tonsillitis, there has been so much danger of suffocation, that it has been found necessary to make an opening into the trachea; which has been done sometimes as high as the larynx, and sometimes considerably lower; and under both kinds of operation the patient has recovered. (Good.)

CHAPTER XXX.

CYNANCHE TRACHEALIS. TRACHEITIS. CROUP.

Cynanche trachealis may be defined: an inflammation in the ttis, larynx and upper part of the trachea, attended with a hoarse and ringing cough, sonorous respiration, and a sense of impending suffocation.

This form of cynanche does not appear to have been generally known as a distinct disease, until Home described it in a work published at Edinburg in 1765. It is not at all likely, however, that the disease is one of modern date, since its ordinary causes have always existed, and it cannot be presumed, that at any period of the world, their influence could have been materially different from what it is at the present day. The disease was confounded, no doubt, with other anginose affections, to some of which it bears, indeed, a very close resemblance in many of its prominent phenomena.

In the long list of human diseases, there is none which presents a more painful scene of anguish and distress, or which excites more poignant feelings of sympathy in the heart of the physician, than the one now under consideration. I have witnessed the approach of death under a multitude of appalling forms; but in all the death-bed scenes which it has been my misfortune to witness, I have never had my feelings so deeply afflicted as when looking on a blooming child struggling under the ruthless grasp of this terrible disease. In some instances this disease comes on suddenly, and in a very short time acquires the utmost degree of violence. More frequently, however, it is gradually developed—a dry and hoarse cough, attended with slight difficulty of breathing, roughness of voice, and some degree of languor or lassitude, being the first intimations of its approach. These symptoms sometimes continue for several days, before the disease is fully developed.

Sooner or later, however, the breathing becomes more difficult, the febrile irritation more obvious, the voice more indistinct and whispering, and the cough more hoarse and sonorous. There is something so peculiar in this hoarseness—such a rough, ringing, and dry sound in the cough, as can never be mistaken by those who have once heard it—and whoever has once heard it in connection with the distressing symptoms which characterize the disease in its state of full development, can never hear this croupy cough, without the most anxious apprehensions. The disease now advances rapidly, and in a short time, acquires the most alarming and distressing degree of violence. The countenance is flushed; the eyes prominent, injected and heavy; the pulse frequent, tense, and quick; the skin dry and hot; and the respiration extremely laborious and anxious. In the commencement of the disease the cough is often quite dry; but in the majority of cases, a very viscid and thick mucus is secreted by the mucous membrane of the fauces and larynx from its very on-set, and which from its spissidity contributes greatly to increase the difficulty of breathing. The sound attending the respiration, especially the act of inspiration, is at first ringing and rather clear, but in the advanced period of the disease, it is characterized by a peculiar *wheezing*, as if the air were forcibly driven through a very narrow aperture. The act of inspiration is always performed with much more difficulty, and occupies a much longer time than the expiration of the air. This latter act is, comparatively, quick and always unaccompanied with the shrill and wheezing sound which attends inspiration. In the advanced periods of the disease, the cough is in all instances attended with a rattling sound, and the expulsion of extremely tenacious mucus from the trachea.

If the progress of the disease be not checked, the difficulty of breathing increases progressively, until, at last, the oppression becomes inexpressibly distressing. The countenance and motions of the little patient indicate the utmost degree of anguish and suffering. The head is thrown backwards, and the mouth kept open to facilitate respiration; the face is of a pale livid hue, the eyes are prominent and half closed; the lips purple, the muscles of the face agitated with the respiratory effort; large drops of sweat hang on the temples and upper lip; the extremities become cold and clammy; partial insensibility ensues; the breathing becomes feeble and interrupted, and the patient finally sinks into a state of total insensibility, which soon puts a termination to the agonizing struggle.

Such are the ordinary course and symptoms of this dangerous affection. Much diversity, however, occurs, in relation to the degree of violence and rapidity of these phenomena. In some instances, the disease proceeds very slowly, the child being troubled during the day with some difficulty of breathing and a hoarse and dry cough, while at night an alarming paroxysm of croup will occur, and continue until towards morning. In this way, the disease will sometimes go on for five or six days; the patient being so free from any difficulty of breathing during the day, as to induce a belief that the disease has been subdued. At night, however, another attack will, perhaps, occur, and continue, with unceasing violence, and in opposition, often, to all our remedial efforts, until it terminates in death. Occasionally the disease is very gradually developed, and continued for nine or ten days, without at any time acquiring a very alarming degree of violence. In cases of this kind the patient is harassed with a very hoarse cough, and considerable difficulty of breathing, with occasional severe exacerbations of the croupy symptoms, both during the day and at night. There is generally a pretty copious secretion of mucus in the trachea in such cases, and the respiration is usually constantly attended with a rattling sound in the chest. These protracted and remitting cases of croup are most apt to occur during difficult dentition.

It would seem, that in some instances, the predisposition to this disease is congenital; for it is well known, that the children of some families are peculiarly predisposed to this complaint, whilst in other families, it never makes its appearance. It is manifest, also, that there is something peculiar to infancy and childhood, which increases the liability to this affection; for its occurrence is vastly more common between the first and fifth year of age, than in the whole subsequent period of life. This aptitude to the disease during early childhood, has been ascribed to the peculiar condition of the glottis and larynx, at this age;

for the existence of some peculiarity in this portion of the respiratory passages during infancy and childhood, unconnected, probably, with mere size of aperture, may be inferred from the characteristic voice at this early period, and its remarkable change at the age of puberty. There is another circumstance, however, which may have a share in creating the aptitude in question, and which has reference to the exciting cause of the disease. The almost univeral mode of clothing infants—with their necks and upper part of the breast bare, cannot fail to render them more subject to the influence of cold, and the consequences of this cause, in the parts thus exposed. It is a fact, which has been forcibly pressed on my attention, that in the country—especially among the Germans, who are in the habit of clothing their children in such a manner as to leave no part of the breast and lower portion of the neck exposed, cynanche trachealis is an exceedingly rare disease. Whereas, in cities, or among people who adopt the modes of dress common in cities, this frightful disease is, in proportion to the population, vastly more frequent. During a practice of six years among this class of people, I recollect of having met with but a single case of this affection, and this case occurred in a family, who had adopted the present universal mode of suffering the necks and superior portions of the breasts to remain uncovered. Certain exanthematous affections, also, sometimes give rise to an increased aptitude for this disease. This is especially the case with scarlatina, measles, and miliary fever. Children of robust and full habits, appear to be much more liable to the disease than those who are feeble, relaxed, and sickly.

Cold and sudden vicissitudes of atmospheric temperature, constitute the principal exciting causes of this disease; and hence its more frequent occurrence during the variable damp and cold months of autumn and spring, than in the more temperate and uniform season of summer. Sitting or lying down on a damp grass plat, or in a current of air after the body has been over-heated by exercise in the sun, is particularly apt to bring on an attack of this complaint. It has been observed also, that in situations naturally abounding in moisture, cynanche trachealis is a much more common disease, than in localities of an opposite character. Under the head of occasional causes may be noticed also, the habit to which I have already adverted; namely, that of suffering the necks and upper part of the breasts of children to remain freely exposed to the air. I have more than once known this disease produced, by children throwing off the bed coverings at night, when asleep and in a state of free perspiration from the warmth of the bed. In general this disease is most apt to occur soon after, or during the prevalence of epidemic, catarrh, measles or scarlatina. During convalescence from the two latter of these affections, there exists, often, an especial aptitude to cynanche from the influence of cold. It would seem, also, that the predisposition to this disease is much increased by having suffered an attack of it; I have known the same individual, suffer five or six attacks of this disease during the period of childhood.

Cynanche trachealis, is a *phlegmasial* affection, consisting essentially, of inflammation of the mucous membrane of the superior portion of the respiratory tube. The correctness of this pathology is confirmed, not only by the known character of its most common exciting cause, but especially, also, by the more direct evidence of the symptoms of the disease, and the appearances on post-mortem examination. Unequivocal signs of previous inflammation are invariably discovered in the larynx and trachea on dissection. It is indeed surprising, that this disease should still be viewed by some of the German and French pathologists, as essentially spasmodic in its nature, and wholly independent either of a general or local inflammatory condition. Several of the late continental writers on this disease, regard the fever and inflammation, which they acknowledge sometimes to exist, as wholly accidental, and as in no manner essential to the perfect constitution of the malady. Professor Nasse regards impaired or disordered functions of the pneumo-gastric nerves, as the proximate cause of this disease. The characteristic symptoms of the disease, he asserts, bear a strong resemblance to those which result from the division of the eighth pair of nerves. The inflammation which occurs in the mucous membrane of the trachea, is, according to his view, secondary, and a consequence of the disordered function of the pneumo-gastric nerves.

There are two varieties of inflammatory croup. In one the inflammation commences in the fauces, and afterwards descends into the larynx and trachea. In cases of this kind, the breathing is, at first, but little affected, but the cough has a peculiarly rough and hoarse sound. On inspecting the fauces, the tonsils, uvula and palate present a swollen and dark red appearance; and the child always complains of considerable difficulty and pain in swallowing. In the other, and most common variety of the complaint, the inflammation commences in the larynx or trachea, the fauces remaining entirely free from redness and swelling. The patient experiences no pain in swallowing, and the respiration is much oppressed from the commencement of the disease. The former variety is, generally, much slower in its progress than the latter,—the hoarse cough and occasional spells of difficult breathing, continuing sometimes for four or five days, before the symptoms acquire a very alarming degree of violence.

The inflammation which occasions the characteristic phenomena of the disease, does not always remain confined to the larynx and trachea. In some instances it extends downwards into the bronchia, and sometimes even into the smallest ramifications. This extension of the inflammation is always attended with the utmost degree of danger; and when it passes down into the extreme bronchial tubes, the result, indeed, must almost inevitably be fatal. In cases of this kind death usually takes place from effusion into the air cells.

In many instances the viscid albumenoid fluid, which is so copiously secreted by the inflamed lining membrane of the larynx and trachea, concretes, over the internal surface of these passages into a sort of membrane; and to this membraneous substance many of the latter and fatal phenomena of the disease are usually ascribed. It must not be supposed, however, that such a pseudo-membrane is formed in all fatal cases; nay, it is quite certain, that it does not occur, even in the majority of cases.

In other instances, the inflammation instead of giving rise to a concrete membraneous substance, terminates in the secretion of a muco-purulent fluid, of an opake and yellowish appearance. There are other cases again, and these are probably, the most common, in which the inflammation produces neither false membrane nor a puruloid matter, but an extremely copious secretion of a very viscid, transparent and frothy mucus. Blaud thinks that these different modes of termination, constitute good grounds for dividing the disease into three principle varieties, indicating three different grades of inflammation. It is not improbable indeed, that the inflammation is at its highest grade of violence in those cases which are attended with the formation of a false membrane. It would appear to be less intense, when, instead of this coagulable exsudation, there is only a muco-purulent secretion formed; and where the secretion consists, simply of tough, transparent and frothy mucus, the inflammation is doubtless at its lowest grade. In the first and most aggravated variety of the disease, the cough and respiration are dry or free from that peculiar rattling sound in the respiratory passages, which occurs when these contain viscid secretions. In cases of this kind, the patient generally experiences considerable pain in the larynx, and the fever is usually very strong. The period at which the false membrane is formed, after the commencement of the inflammation, appears to vary considerably. M. Blaud states that he has found the larynx and trachea lined with pseudo-membraneous matter, in cases whose whole course did not occupy more than twenty hours; whilst in other instances several days appeared to elapse before it was formed. Occasionally only a part of the internal surface of larynx is found lined with this concretion; but in some cases it extends down into the bronchia, and even into the smaller ramifications. Sometimes instead of a membraneous expansion, the upper part of the trachea is found almost entirely blocked up with a thick mass of concreted albumenoid secretion; and this is generally located just within the glottis. I have seen an instance of this kind, in which the opening left through this concreted mass would hardly admit a crow's quill.

When the cough and respiration become humid or rattling, as soon as the inflammation is developed, we may infer that there will be no membraneous concretion formed. Mr. Blaud thinks, that the viscid mucus which is so copiously secreted in these milder cases, is entirely different in its properties, from the secretion which occurs in the former variety—and that it is incapable of being so inspissated as to give rise to a membraneous concrete. In these cases, the mucus in the larynx and trachea is often so abundant, as to threaten suffocation by obstructing the glottis.

Whatever may be thought of M. Blaud's division of this disease, or of his sentiments in relation to the *radical* distinction between the inflammation and secretion which give rise to *membraneous* structures, and that inflammation and its consequent *mucous* secretion which occurs in cases unattended with the formation of false membrane, it must be admitted that there exists at least a two fold diversity in relation to the immediate local consequences of the laryngo-tracheal inflammation—namely, one variety in which false membrane is formed, and in which the cough and respiration are at first dry, or do not indicate the existence of much mucus in the respiratory passages; and another variety in which the cough and respiration are humid, in the early period as well as throughout the disease, and in which a very copious secretion of transparent and extremely viscid mucus occurs. The former are exceedingly dangerous, nay, almost hopeless, unless subdued by the most prompt and powerful antiphlogistic measures in their very onset. The latter are much less dangerous, and may generally be cured by more moderate antiphlogistic measures, and the expulsion from time to time of the tenacious mucus from the larynx and trachea. In nearly all cases the mucous membrane of the larynx and trachea is found very conspicuously injected on dissection; and in those who die under the conjoined symptoms of bronchitis and tracheitis, traces of inflammation present themselves, throughout the whole extent of the bronchial ramifications, and in some instances, the substance of the lungs is infiltrated with serum, and the air cells are choked up with viscid mucus. In the majority of cases, the glottis is narrowed by a kind of thickening or tumefaction of its lips.

Considerable diversity of opinion has been expressed as to the immediate cause of the distressing difficulty of breathing and of death in this disease. In relation to the latter, it is manifest, that an impediment to the intromission of atmospheric air into the lungs, is the immediate cause of death, and that, therefore, death occurs in this disease, from asphyxia. The circumstances which cause the exclusion of the air from the lungs, consist either in a spasmodic closure of the glottis, or in an occlusion of this aperture by tumefaction of its sides, or by the formation of false membrane or a mass of concreted lymph, or finally by an excessive quantity of a very ropy and viscid mucus closing up the passage. Death is also sometimes the immediate consequence of an effusion into, and consequent choking up of the bronchial cells, a mode of termination which almost always occurs when the inflammation descends into the bronchial ramifications.

Spasmodic contractions of the glottis may be excited by the irritation of the concreted membraneous lymph, immediately within this aperture. It is a remarkable circumstance that the difficulty of drawing the air *into* the lungs is always much greater, and attended with much more sound than that which accompanies expiration or the act of throwing the air out from the lungs. This cannot be explained, as some have attempted, by supposing that the portion of the false membrane nearest the glottis becomes separated from the sides of the trachea, and that, consequently, more difficulty and noise is produced during inspiration, on account of a portion of the inspired current of air being forced in between the detached membrane and the surface of the larynx, whereby the ingress of the external air is impeded; whilst in the act of expiring the air, the detached extremity of the membrane would be pressed outwards against the sides of the treachea, and offer, therefore no particular impediment to the outward current of air.

That such consequences might follow the separation of the superior portion of the membrane, immediately within the glottis, cannot be doubted; but when it is observed that the same relative increased difficulty of the *inspiration* is present, in all instances, from the very commencement of the disease, and before any membraneous concretions can be formed, we are forced to admit that, the circumstance in question, depends on some other morbid condition of the parts, implicated in the disease.

The solution of this problem must I think be sought for in the altered sensibility of the glottis and trachea, in consequence of which the contact of the atmospheric air, produces an irritation which excites spasmodic contraction in the *glottis*. It is well known how greatly the vital properties are altered by inflammation. In drawing the external air into the trachea, it irritates the mucous membrane, and excites the glottis to contraction, by which the ingress of the air is retarded, and the difficulty in question produced. This is entirely analogous to what occurs in other organs when in a state of inflammation, from the impression of their appropriate stimuli. Thus light to a healthy eye, is any thing but disagreeable; yet when this organ is inflamed, even a moderate degree of light, gives rise to pain, and an involuntary contraction, or closing of the eye-lids. When the urethra or the neck of the bladder is inflamed, the contact of the urine often excites so much spasm of this canal, as to prevent the discharge of this secretion altogether. In a similar manner therefore, we may conceive, is the increased difficulty of *inspiration* produced in this affection. I wish to be understood, however as referring here only to the comparative difference of the acts of *inspiration* and *expiration*, for the dyspnœa taken as a general symptom, is undoubtedly mainly dependent on the circumstances already mentioned—namely, tumefaction—viscid mucus adhering to the glottis, and in the advanced stages concreted pseudo-membraneous substances diminishing the calibre of the respiratory tubes; and finally effused lymph or mucus into the bronchial cells. During *expiration*, the air ceases to irritate the glottis in consequence of its more elevated temperature, which is now on a level with that of the inflamed organ; and probably also, in a degree, in consequence of the carbonic acid which it contains and which is well known to be a very considerable sedative to irritable parts.

Prognosis.—Cynanche trachealis is always to be regarded as a very dangerous affection. Formerly the majority of cases terminated fatally; but under the present improved pathology and mode of treatment the mortality from this disease is greatly diminished. When early attended to, this complaint is, indeed, as much under the control of vigorous antiphlogistic measures, as any of the more serious phlegmasial affections. In general, the obstinacy and dangerousness of the disease, is proportionate to the intensity of the inflammation, and the extent to which it passes downwards into the lungs. When the fever and croupy symptoms come on suddenly, the danger is, usually, much greater, than where the disease is slowly developed. A sudden attack *without fever*, however, is not, in general, attended with peculiar danger; for in this case, the affection is, probably, purely *spasmodic*—a form of croup much more manageable than inflammatory or febrile cynanche. The shriller and more sonorous the cough is, the more reason is there to apprehend danger. The prognosis in this affection is, often, extremely uncertain. Sometimes, when the symptoms appear to be in a great degree subdued, and every thing promises a speedy recovery, a violent exacerbation will suddenly supervene, and destroy the patient. On the other hand, death may appear to be impending, when, on the sudden expulsion of a membrane, or even without such an occurrence, a rapid change for the better will ensue, and lead on to full convalescence.

Diagnosis.—There is a disease which, in most of its prominent symptoms, bears so close a resemblance to *tracheitis*, that many have been induced to regard it as the same affection, or at most as only a modification of the disease now under consideration. I allude to the *acute asthma* of Miller, or the disease which by some pathologists is denominated, and with perfect propriety, *spasmodic croup*. Although attended with the same extreme difficulty of breathing and sense of impending suffocation which belong to inflammatory croup, spasmodic croup is essentially distinct in its pathological character from the former disease, and of course requires a mode of treatment correspondingly modified. An attention to the following circumstances will enable us to distinguish these two forms of croup from each other.

1. The approach of *cynanche trachealis* is generally gradual, and preceded by the usual train of precursory symptoms, which usher in catarrhal affections. *Spasmodic croup*, on the contrary, almost always comes on suddenly, and is rarely preceded by the ordinary premonitory symptoms of catarrh. It is true, indeed, that in some instances, cynanche trachealis also, supervenes quite suddenly; but when this is the case, it is always so manifestly of an inflammatory character, and is attended with so much fever, that

there can be no difficulty in distinguishing it from the spasmodic variety of the disease.

2. Cynanche trachealis is essentially a febrile disease—the phenomena of fever being never absent. Spasmodic croup, on the contrary, is entirely free from fever, except it be present, as an accidental occurrence. In the former, the urine is almost, invariably, high-colored and scanty: whereas, in the latter affection, it is usually pale, watery and often copious.

3. Cynanche trachealis is often attended with considerable *remissions;* but these are generally of very short duration and incomplete. Entire *intermissions*, except immediately after vomiting, or on the approach of syncope from bleeding, never occur. In spasmodic croup, the intermissions are often complete and protracted; and this circumstance, perhaps more than any other, characterizes this form of croup.

4. Cynanche is always attended with a peculiar hoarse and sonorous cough, and frequently with a copious secretion of viscid mucus in the trachea. Spasmodic croup is rarely associated with much cough, often none at all, and it is always dry.

5. The peculiar ringing sound of the cough and inspiration, so characteristic of cynanche trachealis, does not occur in the spasmodic form of the disease.

6. In cynanche trachealis the pulse is generally frequent, full, quick and tense, and the skin is hot, except towards the fatal termination of the disease, when from the imperfect performance of the respiratory function, animal heat ceases to be generated with due rapidity, in consequence of which the extremities and surface generally, became cool or cold. In spasmodic croup, on the other hand, the pulse is small, very frequent and feeble, and the skin not above the natural temperature.

Dr. Rush has given an account of a post-mortem examination of a child, that had died of spasmodic croup. In this subject, no membrane, nor even any unusual quantity of mucus, was found in the respiratory passages; and the trachea as well as the lungs exhibited a perfectly healthy appearance. It is, indeed, sufficiently ascertained, that cases of a purely spasmodic character occur, which in the extreme difficulty of breathing and other phenomena, bear a strong resemblance to cynanche trachealis. This form of the disease is evidently of the nature of spasmodic asthma, and appears to depend on *cerebral* or *dental* irritation, by which the functions of the respiratory nerves are thrown into disorder.

Treatment.—The principal objects to be kept in view, in the treatment of this affection, are: to subdue the local and general inflammatory irritation; and to promote the discharge of the viscid and concrescible secretions, which are lodged within the superior portions of the respiratory tube. Fortunately the remedies which are found most efficient, in the accomplishment of the latter object, are also among the most useful auxiliaries for the reduction of the febrile excitement and local inflammation. Without doubt, however, the remedy upon which our principal reliance should be placed, for the removal of the tracheal inflammation is *blood-letting*. In the whole catalogue of inflammatory affections, there is no disease, in which bleeding when promptly and efficiently practised, is more likely to prove beneficial, than in the one now under consideration. He who, in violent cases, neglects this important measure, and places his hopes on one or more of the empirical remedies, that have, by different practitioners, been extolled for their supposed specific tendency to counteract the tracheal affection, will, we may be assured have but little reason to flatter himself for his success in the management of this malady. Here, however, as in most of the other phlegmasial diseases, the beneficial effects of bleeding, are limited to the early period of the complaint. If bleeding be neglected, or inefficiently employed in the *first* stage of the malady, its progress will be extremely perilous, whatever other remedial measures may be adopted. When called to a patient labouring under a severe attack of this disease, a vein should be immediately opened, and the blood suffered to flow until a very decided impression is made on the pulse, or until an approach to syncope is induced. When blood is thus efficiently drawn, all the distressing symptoms usually subside for a time; and in some instances this first blow at the disease, subdues its strength so far, as to prevent it from afterwards recovering any alarming degree of violence. More frequently, however, the fever and difficulty of breathing, rise again in the course of an hour or two, and when this happens, and the pulse e not soft and weak, more blood should be drawn, and again to the extent of producing a very obvious impression on the circulation and general system. I have been obliged to open a vein three or four times in the course of the first twelve hours, before a permanent and decisive impression was made on the febrile and inflammatory symptoms. My usual mode of bleeding in this disease, is to have the patient supported in a sitting posture, with his feet immersed in warm water, whilst a vein is opened in the arm. In this way syncope will be induced much more readily, than when the patient remains in a recumbent posture during the operation. Nothing tends so powerfully and promptly to arrest the progress of inflammation as partial syncope induced by blood-letting. During this state the momentum of the circulation is greatly diminished, and a general relaxation of the cutaneous exhalents ensues; effects which have a direct and powerful influence, in reducing the inflammatory condition of the system.

Such copious depletion is, however, demanded only in cases where the local and general inflammatory action is strong; where the pulse is active, firm, quick or tense, attended with a dry and sonorous cough and respiration. Cases of this kind, are apt to terminate in the formation of pseudo-membraneous concretions in the larynx, and our efforts ought to be prompt and vigorous to reduce the inflammation below the grade necessary for the formation of false membrane. After the effusion which gives rise to these concretions has taken place, bleeding will afford but very little or no advantage. Where the febrile symptoms are moderate, and the pulse is free from tension and hardness, and especially where in connection with moderate febrile irritation, the *cough and respiration are accompanied with a copious transparent, and viscid mucus*, blood-letting need very rarely be carried to the extent that has just been mentioned; and may even, in mild instances, be wholly dispensed with.

Next in importance to prompt and decisive blood-letting are *emetics*. They are, indeed, altogether indispensable in managing this formidable malady, and, when assisted by warm pediluvium, rubefacients to the throat, and mercurial purgatives, they will often subdue mild attacks of the disease, without the aid of direct depletion. When the febrile excitement is strong, however, and the breathing is very difficult, with a turgid and flushed appearance of the face, it would be highly imprudent to rely on emetics and their usual auxiliary remedies, without prompt and decisive venesection. Nevertheless, even where bleeding may be regarded as our main stay, emetics are highly useful, and ought always to be employed concomitantly with venesection. They are especially beneficial when the disease is early attended with a copious secretion of viscid mucus in the larynx and trachea. Much of the difficulty of breathing in cases of this kind, depends on this viscid secretion, obstructing the entrance of the air into the lungs. The occasional expulsion of this glutinous fluid from the trachea, by the operation of an emetic, not only greatly relieves the distressing difficulty of breathing and sense of suffocation, but contributes also to obviate the formation of false membrane, by preventing the accumulation and removal of the coagulable secretion in the trachea. They tend moreover, to equalize the circulation and to promote the cutaneous exhalation, as well as to diminish the general arterial excitement by the nausea which precedes and accompanies their operation. When the cough and respiration *are dry*, as they commonly are, during the first stage of highly inflammatory cases, we seldom derive decided advantage from the operation of an emetic, so long as this dryness of the larynx and trachea continues. In such cases the proper period for administering emetics, commences with the appearance of the viscid secretions in the respiratory passages. Without doubt, from the general antiphlogistic tendency of nausea and emesis, some benefit may result from the employment of emetics, before any morbid secretions occur in the trachea; but the peculiar usefulness of this class of remedies, is always most conspicuously displayed when the upper portion of the wind pipe is clogged with viscid mucus.

In the commencement of the disease, there seldom exists any difficulty in procuring free vomiting; but after the disease has continued for some time, or even in the beginning when the respiration is extremely oppressed, there exists, often, so much insensibility of the stomach, in consequence of the imperfect decarbonization of the blood, and the sanguineous congestion in the brain, that great difficulty is experienced in procuring the operaion of emetics. To remove this gastric torpor and procure vomiting, we must endeavour to diminish the congestion in the brain; and this may, in general, be readily accomplished, by putting the patient's feet in warm water, and applying a napkin wet with cold water, to the head. The abstraction of blood, also, while the patient is supported in a sitting or erect posture, rarely fails to restore the sensibility of the stomach and to ensure the prompt operation of emetics.

The articles I prefer, as an emetic in this disease, are calomel in union with tartar emetic. I commonly administer from five to six grains of the former article with one fourth of a grain of the latter, to a child of two to five years old. This may be repeated every fifteen minutes until vomiting is excited. I have frequently given from eight to ten grains of calomel alone, and have generally found it to excite active vomiting in a very short time. The peculiar advantages, which appear to me to attend this practice, are the protracted nausea, which the calomel produces, an effect which has a powerful antiphlogistic tendency; and the alvine evacuations which almost always speedily ensue. Besides these effects, benefit may also be expected from the early constitutional influence of the calomel—an influence which in the present disease especially is very generally acknowledged to be highly salutary. Tartar emetic, ipecacuanna, sulphate of zinc, squills, and the sulphate of copper, have all been used and recommended in this affection; and where the object is merely to procure the expulsion of the tracheal mucus, or perhaps pseudo-membraneous matter, any of these articles may answer our purpose. I have in some cases administered the lobelia inflata with a view to its emetic operation with the happiest effect. From its well known powerful influence on the respiratory functions in asthma, independent of its emetic effects, there is reason for presuming that, in relation to the present disease, it may possess peculiar virtues, and my limited experience with it, inclines me to this opinion. When the stomach is very torpid, and there is urgent necessity for procuring the immediate expulsion of the viscid secretions from the trachea, the *sulphate of zinc*, will in general answer better than any other article of this kind. The following mixture is strongly recommended by M. Jadelot as an emetic, in this affection.[*] In mild cases, a mixture of two parts of the syrup of squills, and one part of antimonial wine, given in tea spoonful doses every fifteen minutes, until vomiting is produced, frequently procures speedy relief. The common hive syrup of the shops, is also an excellent preparation for this purpose. In some instances when the accumulation of the viscid secretions is very rapid, it becomes necessary to repeat the emetic three, four or five times in the course of twenty four hours.

Purgatives are useful auxiliary remedies in the treatment of the disease. In the commencement of the treatment the bowels should be freely evacuated, by an active purgative. After this has been effected, it will be best to employ the gentlest articles of this class of remedies, so as to procure two or three evacuations daily, until the inflammation is subdued. Very active purging throughout the course of the disease, tends to exhaust the powers of the system, without affording any peculiar benefit, over milder aperients. After the first cathartic, it will in general be sufficient to keep the bowels in a loose state by laxative enemata.

Calomel, given with a view to its constitutional influence, has been generally regarded as a highly valuable remedy in this affection. The late Dr. Rush placed great reliance on its powers in croup. When given in large doses in the commencement of the disease and continued afterwards in small doses, "the Peruvian Bark," he affirms, "is hardly a more certain remedy in intermittents than calomel in croup." Dr. Hosack, also speaks very favorably of the employment of this article in conjunction with James' powder, given at short intervals, during the second stage of the complaint; and the late Dr. Bard placed much reliance on its powers. That the constitutional influence of mercury is calculated to do good in cynanche trachealis, I am well persuaded from my own experience. It tends to reduce the local laryngo-tracheal inflammation, and to counteract, as it would appear, the formation of the pseudo-membraneous concretion. In the more acute and rapid cases, however, many of which run to a fatal termination in less than twenty four hours, the constitutional operation of this remedy is much too slow to afford any particular advantages. Where on the contrary the disease is protracted in its course, or assumes somewhat of a chronic character, great benefit may unquestionably be derived from this potent remedy. My usual mode of giving calomel, after the first or second emetic, is to exhibit one grain every hour or two, with about one fourth of a grain of ipecacuanna.

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[*] ℞. Infus. polygalæ Seneg. ℥iv.
Syrup. Ipecac. . . . ʒi.
Oxymil. Scillæ . . ʒiii.
Antimon. Tart. . . gr. ss.
M. Take a table spoonful every 15 minutes until vomiting is excited.

Among the remedies that may be usefully employed for the reduction of the tracheal inflammation, the *warm bath* deserves to be particularly mentioned. Used along with the remedies already mentioned, its benefits are often considerable, more especially when the skin is very dry and harsh. It is to be observed, however, that its usefulness is, in a great measure, confined to the early period of the disease; for in the advanced stages of violent or unsubdued cases, the pulse is not only weak and very frequent, but the surface is generally bathed with a profuse and cold perspiration. Under these circumstances, no advantage but rather injury, would result from the relaxing influence of the warm bath.

Rubefacients and blisters are important remedies in the treatment of this affection. As soon as blood has been drawn, some irritating liniment, or a blister, ought to be applied to the throat of the patient. In general, the spirits of turpentine answer better for this purpose than any other rubefacient we possess. Its action on the skin is very prompt and powerful; and if the derivative powers of such applications be proportionate to the degree of irritation and pain they produce, few articles can equal the present one in this respect. A piece of flannel may be imbued with the turpentine and applied round the neck. Children seldom bear this application more than twenty or thirty minutes at a time. It should therefore be removed and reapplied, from time to time, according to the violence and permanency of its effects upon the skin. The oil of the *monarda punctata*, with an equal proportion of camphorated liniment, forms, also, an excellent rubefacient in this affection.

Judging from my own experience, I am induced to prefer the employment of rubefacients to that of epispastics. The former have always appeared to me to do as much good as the latter, and they possess the great advantage of acting with great promptitude—a circumstance of no small consideration in a disease which often runs its fatal course in a few hours. A blister requires four or five hours before its effects on the skin can be of any particular avail; whereas the impressions of some of the essential oils are almost instantaneous. Nevertheless, where the disease proceeds slowly, blistering will be highly beneficial, and should not be neglected.

Local bleeding, by leeching, does not appear to make obvious impression on the tracheal inflammation; and it is now seldom if ever resorted to, except where the disease is attended with inflammation and swelling with the tonsils and palate. In one instance, in a child about six years old, I have known cupping on the back of the neck to procure manifest relief; but this case, was associated with conspicuous inflammation in the fauces.

Formerly, the root of the *polygala senega* was held in high estimation as a remedy in this disease; and it is unquestionably a very useful medicine in certain states of the disease, although, most assuredly, far from possessing the powers which were at first ascribed to it by Archer and others. In the commencement of the complaint—-more especially in violent cases, this article is objectionable on account of its stimulating properties; but after the general and local inflammatory irritation has been to a considerable degree subdued, or the disease has lost its acute character, or assumed a chronic form, it is often highly beneficial. When a dry and hoarse cough, with slight difficulty of breathing remains, after the inflammation has been subdued, the polygala will in general prove more useful than any other remedy we possess. In all chronic croupy affections, and in the catarrhal sequela of this and other accute affections of the respiratory organs, it is a remedy of very excellent powers. It should be given in decoction. An ounce of the root to a pint of boiling water, simmered down to about three gills and sweetened with honey forms a suitable preparation. From one to two or three tea spoonfuls of this decoction should be given every hour or two, according to the age of the patient and the urgency of the symptoms.

The *hepar sulphuris* (deuto-sulfure of potassium) was introduced to the notice of the profession, as a remedy in this disease, about twenty years ago, in a prize essay on cynanche trachealis, presented to the French *Ecole de Medécine*.* Its introduction was founded on the erroneous doctrine that croup consists essentially in a morbid coagulability of the tracheal mucus, and which, it was asserted the sulphuret of potash had the power of preventing or correcting. It need, scarcely, be observed, however, that a remedy, which might possess such a power, without, at the same time exerting any influence in subduing the inflammation, could afford but little advantage in this affection; and the result of later experience goes to show that this, at first highly lauded remedy, exerts no obvious influence over the tracheal inflammation—and it is accordingly, now, very properly, universally abandoned.

When called to a patient labouring under this disease the fauces should be carefully inspected. It is now well ascertained that the albumenoid exudation which forms the false membrane, often commences on the surface of the inflamed tonsils, and thence spreads along the arches of the palate, and at last descends into larynx and trachea. In such cases the fauces will be found tumefied and of a dark red colour, and whether there be any appearance of false membrane or not, immediate attention should be paid to this inflammation. Dr. Mackensie, states that the application of a solution of the *nitrate of silver*, to the tonsils and soft palate, will, in such cases, often remove the membraneous crust completely, and procure speedy and great relief, and ultimately an entire removal of all the dangerous symptoms. "The solution which I employ," says Dr. Mackensie, "is a scruple of the nitrate of silver in an ounce of distilled water. By means of a large camel hair pencil, this solution is to be freely applied, once, or twice a day according to the severity of the symptoms, to the whole lining membranes of the fauces. The surface of the tonsils, or wherever else the fibrinous crust is actually in view will of course be particularly attended to; but I do not hesitate to push the pencil to the lower part of the pharynx. This remedy so far from being productive of any irritation beyond the mere mechanical and temporary one attending its employment, uniformly alleviates the symptoms of the croup, such as the difficult respiration, the barking cough, and the peculiar anxiety of the little patient."

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* Rapport sur les ouvrages envoyees au concurs, sur le *croup*, par la commission chargee de l'examen et du jugement de ces ouvrages. Paris, 1812.

In one instance which came under my notice, this application was decidedly beneficial. Laennec has published an account of some cases from which it appears that insufflation of very finely powdered alum, generally affords speedy relief, not only in this variety of the disease, but also in cynanche laryngea and tonsillaris. I have recently prescribed in a case of this kind, in which I derived unequivocal advantage from this remedy. Four or five grains of finely powdered alum should be introduced into the end of a small tube, (the barrel of a quill will answer,) and forcibly blown into the fauces. This practice appears to me of the utmost importance in cases of this kind, and ought never to be neglected, where the fauces on inspection, present an irritated and inflamed condition. Success in the treatment, must depend materially on the prompt reduction of this primary extra laryngeal inflammation.

With a view of expelling the false membrane, emetics have been recommended in the advanced period of the disease, and the records of medicine are not wanting in instances in which this object was effected by such a measure. It offers, however, but and exceedingly slender foundation to build any hopes upon. The same object has in one or two instances been obtained by exciting violent sneezing by blowing snuff into the nostrils through a small tube. As to the proposed operation of tracheotomy in order to detach and remove the membrane, all experience has so far decided against it.

[The application of lunar caustic to the fauces, to arrest the progress of croup, has been called the *abortive* treatment. Dr. Green, of New York, passes the solid caustic into the larynx; and Professor Bryan, of Philadelphia, reports a case in the Medical Examiner, successfully managed in this way.

Professor Meigs is partial to alum, as an emetic, in the treatment of croup, given in teaspoonful doses. The remedy finds little favour in the profession, and, judging from its well-known therapeutic relations, we infer that it never will.]

CHAPTER XXXI.

CYNANCHE LARYNGEA.

This disease generally commences with a slight sensation of chilliness, alternating with flushes of heat, attended with a feeling of soreness in the fauces, more or less tenderness to pressure about the top of the thyroid cartilage, and some pain and difficulty of swallowing. The voice soon becomes changed into a thick, hoarse whisper, and on strong inspiration the air seems to enter into the trachea with difficulty, or as if it were forced through a very narrow aperture, and is attended with a dull rough sound. On inspecting the fauces, the tonsils, soft palate, and uvula, present a bright red, and œdematous appearance. There is seldom much expectoration, but the saliva is usually abundant and of a very viscid character. The febrile symptoms are not vehement, the face being for the most part pale, and the pulse frequent, small and tense. The tongue is covered with a thin white fur, over which a thick layer of transparent mucus is spread. As the disease advances, deglutition becomes more and more painful, and is apt to excite alarming and distressing paroxysms of suffocative breathing. The temperature of the surface is very unequal, some parts being very warm, whilst others are preternaturally cool. Dr. Armstrong observes, that the most peculiar and characteristic symptom of this affection, is the total inability to cough out, as is done in pneumonic and catarrhal complaints; the attempt to do so, resulting in a kind of suppressed or suffocative effort, terminating "in a low, grumbling and almost grunting sort of noise in the throat." The difficulty of breathing increases progressively as the disease advances, with frequent distressing paroxysms of dyspnœa, until, in unsubdued cases, death at last occurs by actual suffocation.

The disease sometimes approaches in a very gradual and insidious manner, the symptoms for a day or two, resembling those of ordinary catarrh, with slight hoarseness. In some instances, it comes on suddenly and in a very short time acquires a fatal degree of violence. Mr. Porter relates two instances, where the individuals went to bed at night, without complaining of any illness, "and were found dead from this affection, the next morning." A case is also reported by M. Leville, which was so marked by erysipelas of the face, as to escape observation until within a few hours of its fatal termination.*

Cynanche laryngea may be distinguished from croup, by the following circumstances. In this affection there is always pain experienced in the larynx, generally referred to the top of the thyroid cartilage. Deglutition, too, is invariably painful and difficult, and after the disease is fully developed, often wholly impossible. On inspecting the fauces they are found somewhat swollen and inflamed; and every attempt to swallow brings on a paroxysm of suffocative breathing. None of these symptoms occur in cynanche trachealis, except occasionally swelling and inflammation of the tonsils and palate.

"The seat of this affection is more in the cellular tissue connecting the mucous membrane with the adjacent parts than in the membrane itself, although this latter structure is very frequently in an inflamed condition."† The tonsils, soft palate, larynx, and epiglottis are always tumefied, red, and in some instances vesicated. The rima-glottidis, also, is in general, so much swollen as nearly to close the aperture. The swelling of these parts appears to be œdematous, depending, mainly, on the effusion of serum into the submucous cellular tissue. Sometimes the inflammation is confined to the larynx, but in some cases, it extends down into the trachea and even into the bronchia. (Armstrong.) The principal seat of the inflammation, however, is in the epiglottis, which is usually "red, erect, œdematous, and during life resembles a piece of raw meat." (Porter.) Cases have occurred in which the inflammation terminated in the formation of one or more abscesses in the cellular tissue surrounding the larynx.

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* Gazette de Sante 1827.

† Observations on the Surgical Pathology of the Larynx and Trachea, &c. By Wm. Henry Porter. p. 98.

Treatment. Laryngitis is a most rapid and dangerous affection. It often terminates fatally in less than twenty four hours, under the most energetic and judicious course of treatment. *Blood-letting* does not appear to exert the same degree of influence in arresting the progress in this affection as it generally does in other varieties of tracheal inflammation. Dr. Armstrong declares, that he has known "one hundred and sixty ounces of blood drawn, within the space of six hours" in adult patients, without making the slightest impression on the progress of the malady. In only one out of six cases, he says, did blood-letting appear to afford any obvious advantage. From the occasional vesication of the affected parts, and the serous infiltration into the cellular tissue, it would seem, that the inflammation partakes more of the erysipelatous than of the phlegmonous character; and this is probably, the reason why bleeding though prompt and copious, exerts so feeble an influence over its progress.

But although blood-letting does not often procure any prominent benefit in this affection, it is unquestionably decidedly indicated, and ought always to be promptly and efficiently practised. Dr. Beck of New York thinks, that the apparent inefficacy of bleeding in this complaint, is to be ascribed to the inadequate manner in which it has been usually employed. When carried to the extent of producing syncope, he says, it is as likely to do good in this as in other severe inflammatory affections of the respiratory organs. My own experience, does not, however, entirely accord with this observation. Nevertheless bleeding to the extent of producing fainting, ought to be regarded as an indispensable measure in the treatment of this affection. After blood has been efficiently drawn with the lancet, leeches should be largely applied to the throat. Martinet has reported a case, which terminated favorably under the employment of general and local bleeding and blistering. Dr. Arnold, has, also, related a case, in which the use of the lancet and leeching was decidedly beneficial.* A *blister* ought to be early applied to the throat, or to the back of the neck. In a case which I attended about two years ago, very obvious benefit was derived from blistering the back of the neck, while leeches were applied to the throat. It is not necessary or even advisable to delay the application of the epispastic until the momentum of the circulation has been moderated by depletion. The earlier the blistering is resorted to, the greater the chance of deriving advantage from it. Armstrong places more reliance on the repeated employment of antimonial emetics in this complaint than on any other remedy. After he had repeatedly failed in subduing the disease by blood-letting and counter-irritating applications, he resolved to try the effects of repeated emetics. He accordingly, resorted to the use of antimonial emetics in five cases, to which he was subsequently called; and, he declares, that "no circumstance in his professional life ever gratified him more than the great and sudden relief which vomiting afforded in these cases. It removed all the urgent symptoms at the time, and, being re-excited as soon as ever the slightest signs of stricture in the larynx returned, it at last completed the recovery." In a well marked case, which I attended a few years ago, in a child about four years old, blood-letting to the extent of producing syncope, followed by a blister to the throat, and three active emetics in the course of about fifteen hours, effected a cure. *Purgatives*, are very useful auxiliaries in the management of this complaint. The bowels should, in the first place, be freely evacuated by a full dose of calomel in union with rhubarb or julap; and afterwards kept in a loose state, by enemata, and repeated doses of calomel, both with a view to its aperient and constitutional operation. In the case reported by Dr. Arnold, the symptoms, though checked by blood-letting, did not entirely yield, until the gums became sore from the free use of calomel. From what I have witnessed in a case which occurred to me a few months ago, I am inclined to believe, that great benefit would, in general, be derived from blowing finely powdered alum through a small tube into the fauces. In cynanche trachealis attended with inflammation of the tonsils and palate, this application has within the last three or four years, been much employed with the happiest effect, both in Europe and in this country; and it seems highly probable that an early recourse to it in the present affection, would often do much good.

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*Med. Chir. Transact. vol 9, p. 31.

Tracheotomy has in several instances, been performed with entire success in this disease; and Dr. Porter strongly recommends the operation whenever the remedies already mentioned do not make an early and decided impression on the laryngeal affection. "There are many reasons," he says, "why the practitioner should decide, at once, on the performance of tracheotomy, if the appropriate antiphlogistic measures do not afford early relief. Thus it allows the organ in which the inflammation is seated, to remain in a state of perfect repose. Considered as a wound, it adds nothing to the patient's danger; and as the relief it affords is, at least for a time, complete, it imparts confidence to the surgeon, and allows him leisure to examine the symptoms and the remedies accordingly. If however, the operation be *not early* performed, it had much better be let alone altogether." Dr. Crampton has reported a most interesting instance of the successful performance of this operation in acute laryngitis. Professor Regnoli, has given an account of two successful instances of tracheotomy in *chronic* laryngitis. Acute laryngitis, he observes, sometimes terminates in chronic inflammation and œdema of the epiglottis and mucous membrane of the larynx, which ultimately renders respiration extremely difficult, and may even cause death by suffocation In cases of this kind tracheotomy is the only means of relief in our power.*

[The sudden fatality of this disease, is now known to arise from the termination of the inflammatory action by effusion, setting up an œdematous state of the glottis, so extensive as to induce suffocation. Trousseau, in order to relieve this condition, and avert the consequences, tells us that he has at once met the case by passing his finger down to the spot, and rupturing the mucous covering with his nail. This done, the effused serum instantly escapes, and respiration is relieved of its embarrassment. A skilful operator could, with little difficulty, pass down a scalpel, and make the necessary opening. The absolute necessity of a prompt resort to this expedient, cannot fail to be appreciated by every reflecting mind.]

* Nuvo mercurio, delle scienze mediche. Maza 1829.

CHAPTER XXXII.

ARACHNITIS. HYDROCEPHALUS. DROPSY IN THE BRAIN.

Arachnitis often makes its approaches in a very gradual manner. In many instances manifestations of an unusually irritable condition of the brain occur, and continue for several weeks before the disease is fully developed. During this irritative stage of the disease, the patient manifests a very irritable and fretful temper; he is wakeful, and when sleeping he grinds his teeth, and often starts or awakes suddenly with violent screaming and a peculiar expression of alarm in the countenance. Infants cry frequently without any apparent cause, and often start at the slightest noise and shrink suddenly as if pricked with a pin. The bowels are generally irregular, and the evacuations of an unnatural appearance. This irritative condition sometimes continues for a considerable time, without passing into actual inflammation, the child gradually regaining its ordinary state of health. If, however, some additional exciting causes supervene, such as difficult dentition, cold, or gastro-intestinal irritation from improper food or other offensive matters lodged in the alimentary canal, this irritative condition of the brain, is more or less rapidly aggravated, until it finally passes into actual inflammation. A new train of symptoms now ensues, which characterizes the inflammatory stage of the disease.

The patient now begins to experience transient pains in the head, and in most cases in the abdomen. These abdominal pains are occasionally very violent, but always very transient. The restlessness, and irritability of temper increase and the countenance is expressive of discontent and suffering. The face is usually pale with an occasional flush on one cheek. The eyebrows are, at times, contracted into a peculiar frown; and the eyelids generally kept in a half-closed state on account of the sensibility of the retina. The appetite is variable, in some instances voracious, but more frequently impaired. The state of the bowels also is variable, being sometimes—indeed most generally—torpid, and at others relaxed, the stools presenting an unnatural appearance. As the complaint progresses the pains in the head become more and more severe. They are however seldom continuous; becoming occasionally much lighter, and at times for a few minutes entirely absent. The headache is chiefly seated in the forehead, shooting backwards and towards the temples. Children manifest their sufferings from this pain by almost constantly putting their hands to the forehead, and I have seen instances in which the little patient kept one of the hands continually applied to the head, and would not suffer it to be removed for an instant. At this period of the disease, the stomach is apt to become very irritable—the retching and vomiting being sometimes very troublesome, particularly on sitting up or taking any thing into the stomach. Children, affected with this disease, seldom bear the erect position without much uneasiness. I have met with many instances, in which the patient manifested no disposition to vomit while in a recumbent posture, but the moment his head was raised from the pillow, sickness and vomiting ensued. In the early part of the disease, however, the patient does not, generally, sleep easy with his head low. He is very restless, turning and tossing from one side of the bed to the other, and frequently groans, or whines, as if under the influence of pain. In some instances, the pain in the head, and the sickness and retching alternate with each other, the former ceasing as soon as nausea and vomiting come on. Frequent and deep sighing, is one of the most constant and characteristic symptoms of this malady. It is seldom very conspicuous, however, until the disease has made considerable progress, and is generally most remarkable, about the time when the inflammation is terminating in effusion, and some degree of cerebral torpor and somnolency are present. Delirium usually, occurs, during the latter part of the inflammatory stage: but it is never violent or furious, and very rarely so great, that the patient may not be roused from it, so as to give correct answers. Martinet observes that when the arachnoid membrane of the convexity of the brain is the principal seat of the inflammation, the delirium is much more constant and conspicuous, than when the base of this organ is the part chiefly affected. The skin, during this stage is generally dry and above the natural temperature; and the pulse is frequent, quick, and tense or sharp, but seldom full. The tongue, usually, remains clean, or covered only with a thin white fur, with pale red edges; but in cases depending on intestinal irritation, it generally becomes loaded with a thick brown fur, which towards the termination of the disease becomes dark, dry and rough. After these symptoms have continued for an indefinite period, a new series of phenomena ensues, characterizing the third, or somnolent stage of the disease. The delirium now returns more frequently and continues longer; the countenance exhibits a peculiar expression of surprise and stupor, which it is impossible to describe, but which when once seen cannot be easily mistaken or forgotten. The conjunctiva, presents a suffused and reddish appearance; the pupils are dilated or much contracted, and the retina, in some cases, is extremely sensible to light. During sleep, the eyes are generally turned up, so as completely to hide the cornea under the upper lids. The patient now manifests a constant disposition to sleep; he becomes inattentive to surrounding objects, and when roused from his stupor he soon relapses into the same somnolent state. There is, in nearly all cases, great torpor of the intellectual faculties, or an impossibility, it would seem, of directing them to any object, or bringing them into action, so that the patient can seldom be induced to utter more than monosyllables. This mental apathy and torpor does not, however, occur, until disorganization or effusion is about taking place in the brain; for in the earlier periods of the disease, there is often great activity of the mental faculties. The drowsiness and mental torpor increase more and more, until a complete state of coma ensues. This morbid somnolency is the most constant of all the phenomena of the advanced period of the disease. In no instance where the complaint is not early arrested, does this symptom remain absent. In some cases, after the febrile and inflammatory symptoms have continued for some time, the coma comes on suddenly, in conjunction with paralysis of one side or of one extremity; but, it much more commonly supervenes in the gradual manner just mentioned. Indeed instances occur, in which the febrile irritation is so slight as to escape attention, the first obvious manifestations of the disease, being an unusual drowsiness and mental torpor. In cases of this kind arachnoid inflammation, is no doubt going on without manifesting itself by the usual local and general symptoms of inflammation. It is a fact, well ascertained, that inflammation sometimes goes on in the brain, even to the extent of producing fatal disorganization, without manifesting its existence either by pain or any other symptom indicative of inflammation. Soon after the somnolent stage supervenes, paralysis generally occurs on one side, or in one extremity. In infants we generally, at first, notice a tremulous motion of one arm with the hand firmly bent inwards. By degrees the power of using the arm and leg of one side, becomes much weakened, which, in a short time, terminates in complete paralysis. At the same time, one or both the upper eye-lids, usually, become paralyzed, so that the patient, in endeavouring to look at any thing, is unable to raise the lids by their proper muscles, and is therefore obliged to draw them up with the integuments of the forehead by the contraction of the occipito-frontalis muscle. Strabismus, almost always occurs, previous to the supervention of paralysis, or deep coma. When the symptoms, last mentioned, namely strabismus, paralysis and coma occur, we may presume that disorganization or effusion has taken place in the brain. Soon after the inflammation has terminated in effusion, a sudden amendment, usually, takes place in all the alarming symptoms. The patient seems to have suddenly passed into a state tending to convalescence; and parents and friends, nay even physicians are apt to flatter themselves, that a speedy, though unexpected, recovery is at hand. This flattering calm is, however, almost universally fallacious, and of short continuance; for sooner or later, a paroxysm of convulsions suddenly supervenes, or the patient relapses into a state of fatal coma and stupor, which, at once and forever, puts an end to all hopes of a favorable termination. Convulsions rarely, if ever, remain wholly absent towards the fatal termination of this disease. The pulse which in the first and second stages of the complaint, is quick, frequent, and tense, becomes slow, full and generally irregular or intermitting, during the somnolent stage; but when paralysis, and especially convulsions supervene, it again becomes very frequent, small, and corded. In the latter stage of the disease, vision, and occasionally hearing are wholly destroyed, yet general sensibility, or the sense of touch, usually remains to the last moment. Infants will sometimes readily lay hold of the nipple, and suck freely, although in a state of continued stupor and wholly deprived of the sense of seeing. The paralysis which occurs in the latter stage of the disease, is almost universally of the hemiplegiac kind. Infants are apt to keep the unaffected arm in continued motion.

The disease does not however always come on in the gradual manner or proceed with the train of symptoms just described. In many cases the attack commences and proceeds in a manner very similar to what occurs in the disease described by authors under the name of infantile remittent. In instances of this kind, the patient, after a few days' languor and drooping is seized with considerable fever attended with head-ache, flushing of the countenance and tenderness of the abdomen. The fever differs from that which occurs in the ordinary form of the disease by being subject to frequent and irregularly recurring intermissions. During the exacerbations there is generally considerable stupor; the patient often screams and starts up, in a state of great alarm and agitation. The stomach is always exceedingly irritable—vomiting being often excited merely by changing the position; and the bowels are in a state of obstinate constipation. The countenance is usually expressive of terror and pain or of dejection and intellectual torpor.

In some cases the disease is ushered in by convulsions without any previous manifestations of febrile excitement. In instances which make their invasion in this manner, however, there is always some evidence of ill-health previous to the occurrence of the convulsions—such as a peevish and fretful temper, variable appetite, irregularity of the bowels, tumid abdomen, foul breath, swelled upper lip, starting and grinding of the teeth during sleep—in short, all that train of phenomena which results from gastric irritation in consequence of worms, or other irritating substances lodged in the alimentary canal. I have known the first intimation of the presence of this almost hopeless disease, to be *coma*, attended with deep sighing, cold hands and feet, pale countenance, and paralysis.

Occasionally the disease commences and proceeds to the last stage with scarcely any other symptoms than slight febrile irritation, with little or no pain in the head, but a very frequent desire to pass urine, which is voided in very small quantities and with much difficulty. I attended a case a few years ago, in which not above a gill of urine was discharged in twenty four hours, accompanied with no other manifestations of indisposition, than a slightly feverish, and drowsy condition during the first five or six days. Dr. Monro, observes, that "there are cases in which the little patient has a desire, every hour, to pass urine."

The liver almost always suffers considerable functional derangement in arachnitis. During the forming stage of the complaint, there is generally a manifest deficiency of bile in the evacuations, but in advanced periods, this secretion generally is not only copious, but decidedly vitiated in its quality. This is particularly observed in the latter period of the second stage, or in the commencement of the third stage, when the symptoms of cerebral oppression are about supervening: at this period, the stools, frequently, consist almost wholly of dark bile and intestinal mucus, presenting a very dark green and glairy appearance, resembling, as Dr. Cheyne observes, "chopped spinage," or, in some instances, tar.

Diagnosis. The characteristic symptoms of the first stage are: great irritability of temper; irregularity of the bowels; variable appetite; an irritated and quick pulse; wakefulness; and a peculiar frowning expression of the countenance. In the second stage: more or less continued pain in the head; torpor of the bowels; nausea and vomiting particularly on rising from the recumbent posture; irregular febrile exacerbations; a peculiar distressed expression of the countenance; sudden waking from sleep; transient and severe pains in the abdomen, alternating frequently with acute pain in the head; a circumscribed flush on one cheek; intolerance of light and sound; a hot and dry skin, with a frequent, tense, and generally active pulse. When the disease has advanced to the third stage it is easily recognized, by great drowsiness, strabimus, hemiphlegia, paralysis of the upper eye-lids, and finally coma and convulsions. The disease with which arachnitis is most apt to be compounded is infantile remittent fever. In this latter affection, however, the remissions are regular and generally complete; whereas in arachnitis, there is the utmost irregularity in the recurrence of the exacerbations and remissions, nor are they so perfect as in infantile remittent. Dr. Cheyne observes that the appearance of the stools, also, affords us a good diagnostic sign between these two affections. In infantile remittent the alvine evacuations are very fetid, and of a dark brown or mud-like color; whilst in arachnitis, they are usually of a dark green or glairy appearance, resembling the fresh ordure of cows. In idiopathic arachnitis, the abdomen, almost always becomes collapsed or flattened, without an increase of the alvine evacuations; whereas in infantile remittent, the belly is generally tumid, tense, and elastic. This circumstance is much insisted on by Goelis, as a diagnostic sign between these complaints. There is seldom much secretion of saliva, in arachnitis, both the mouth and nose being usually dry. In infantile remittent, on the other hand, the saliva and mucus of the nose are generally abundant. In the former affection, the tip and margin of the tongue are commonly clean and red; whilst in the latter, the whole surface of the tongue is covered with a thick, white fur, which becomes darker, and dry as the disease advances. There is almost invariably severe and continuous pain in the head, in arachnitis; whilst in infantile remittent, or worm fever, headache is a very uncommon occurrence. In the latter disease, the little patient is almost constantly picking his lips and nose with his fingers; while in the former complaint he is apt to direct his hands to the forehead. In infantile remittent, moreover, the patient is often observed to have a movement of the deglutition during sleep, and when awake, he sometimes thrusts his fingers back into the fauces, as if desirous of removing something. These symptoms rarely, if ever occur in idiopathic arachnitis. In the former, the face is usually pale and leaden in the advanced periods of the disease; whereas in the latter, a conspicuous circumscribed flush often appears, on one or both cheeks. In arachnitis the head is generally the hottest part of the body; in infantile remittent, the abdomen is usually the warmest part. "Vomiting is one of the most invariable symptoms in the first stage of arachnitis, and is attended with this peculiar characteristic—namely, it comes on unexpectedly and suddenly, without being preceded by much nausea, and is more frequent when the patient is supported in a sitting position, than in a recumbent posture. If a child vomits frequently, at considerable intervals, if it be costive or the alvine evacuations are irregular and unnatural in appearance, if the abdomen is collapsed or flat and painful to pressure, if the urine be slimy and high colored, if there is much headache, and if the whole state of the disease manifest an obstinate or unmanageable course, then we have great reason for believing that the complaint is principally located in the head, and that, if not subdued, it must result in cerebral oppression."

Although these circumstances will frequently enable us to form a satisfactory diagnosis, in relation to these two affections; it must be confessed, that in the commencement, arachnitis, is seldom cognizable; and that there is no symptom, which can be depended on as characteristic of the disease, during its early periods.

Dr. Alexander Monro has described a variety of hydrocephalus, which he calls the "hyper-acute form" of the disease, a form of very rare occurrence, and simulating in some of its most striking symptoms, inflammatory croup. "This rare form of the disease is very sudden in its attack. There is no previous headache, drowsiness, stupor, nausea, vomiting, paralytic state of any part of the body, or any other symptom denoting a derangement of the functions of the nervous system. It begins like croup. The child awakens in the night in a state of extreme agitation, and much flushed, and with a quick pulse; he is hoarse, and the sound of the voice when he inspires is similar to that of croup. The patient, at the onset of the disease, seems in a state of nervous irritation; often starts in his sleep, and in a short time, the disease assumes the appearance rather of a spasmodic affection of the larynx, than of the inflammatory croup. The matter thrown up by vomiting, consists generally of indigested food. The longer the disease continues, the shriller and hoarser the voice becomes."

In the dissections which were made of children who died of "this form of disease, Dr. Monro found in one instance, the vessels of the pia mater at the corpora quadrigemina and tractus obtici, and at the origin of the eighth pair of nerves, much distended with blood. No morbid appearance was discovered in the larynx and trachea." In another case, "the upper part of the brain, particularly the superior part of the posterior lobes, was covered with transparent gelatinous effusion;" and about an ounce of colored serum was found in the ventricles. "The vessels of the spinal marrow were turgid, those of the cervical portion of a vermillion-red color, and those of the lumbar portion of a dark-red hue. *The eighth pair of nerves* was of a deep uniform red color along its whole tract, as far as its branches, going to the lungs."

Dr. Burns attributes this form of hydrocephalus, "to an affection of the origin of the eighth pair of nerves, induced by the state of the extremity of the fifth pair, in dentition, acting on its origin, which is near the eighth."*

Prognosis. The prognosis in this disease must be always extremely unfavorable. The instances of recovery from it are indeed exceedingly few. In the course of twenty years' practice I have known but two fully developed cases, which terminated in health, and it has fallen to my lot to have seen, and prescribed for a very considerable number of patients ill with this appalling disease. I have already adverted to the flattering but illusive truce which sometimes occurs in the latter period of the disease.—Often, in the early period of my professional career have I been induced to think, by this ominous calm, that I had conquered the disease; and to announce to the anxious friends my good hopes of a speedy return to health. These hopes, however, were always blasted; and though taught by previous experience I have again and again thus hoped and thus encouraged, and always with the same painful conviction of the fallaciousness of this delusive interval. It is indeed extremely difficult to see so perfect a freedom from all the previous alarming symptoms, and not to flatter oneself, that recovery may ensue. When we see the little patient, emerge from a state of intense suffering and danger, and assume the smile and playfulness of convalescence—when from a state of stupor and unconsciousness, he awakens, as it were, to the feelings and actions of returning health, it is not easy to persuade oneself that all this hope-inspiring change is but the illusive prelude to the last, painful struggle, which inevitably leads to the grave.

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* The Morbid Anatomy of the Brain. By A. Monro, M. D. 1827.

Post-mortem appearance.—The appearances discovered in the brain, on dissection, are very various. In some instances the arachnoid membrane is minutely injected, presenting a very red appearance, throughout its whole intent; in others this membrane is found considerably thickened and opake. A purulent, sero-purulent, or sero-gelatinous matter, is in many cases found between the arachnoid and pia mater; and in the greater number who die of this conplaint, from one to four or six ounces of serous fluid is effused into the lateral ventricles of the brain.—In some cases, however, very little or no serous fluid is entravasated into the ventricles or between the membranes of the brain. Martinet and Duchatelet, in their interesting work on this disease, state that in eight cases out of twenty-six, there was scarcely a trace of serous effusion discovered within the cranium. In cases of this kind, the *substance* of the brain, is generally found conspicuously altered, both in consistence and color. Considerable portions of the brain are sometimes completely disorganised and reduced to a pap-like consistence; and instances have occurred, in which a portion of the cerebral substances was found much indurated. Occasionally cases are met with, where no other manifestations of cerebral disease, are detected, than signs of strong sanguineous congestion in the brain, with but little serous effusion and no marks of meningeal inflammation or structural lesion. Not unfrequently, unequivocal marks of previous disease in the abdomen, are detected,—sometimes the colon presents an enlarged and distended appearance; at others, considerable portions of it, are so much contracted as hardly to admit of the introduction of a large sized bougie. Frequently we find more or less extensive portions of the mucous membrane of the bowels, minutely injected; and I have seen it extremely red, throughout the whole extent of the small intestines. In one case, the lower part of the ileum was of a dark livid color resembling incipient gangrene. Dr. I. C. Smith has given an account of a case of hydrocephalus, in which on post-mortem examination, the stomach was much contracted, and "on laying it open, an ulcer was found near the cardia, and the mucous and muscular coates, at this place were entirely destroyed, nothing remaining but a greenish mucus."

Causes.—A strong predisposition to this disease, is manifestly hereditary, or constitutional, in some instances. The peculiar aptitude to this affection, in some families, is sometimes strikingly exemplified. I know several families who have lost nearly all their children by this indomitable malady. It is difficult, if not impossible, to say in what this predisposition consists. It may be presumed, indeed, that children of an irritable habit of body, with a strong tendency to a preternatural determination of blood to the brain, are more liable to the disease than such as are of an opposite temperament. It has been supposed that children who have very large heads, are peculiarly predisposed to the arachnitis; but the correctness of this opinion is decidedly contradicted by experience and observation. It has been affirmed, moreover, that the scrophulous habit is often attended with a particular predisposition to this complaint—an observation which appears, indeed, to be well founded. In a large proportion of instances, Dr. Mills found, on post mortem examination, unequivocal appearances of scrophula; and out of twenty-two cases which came under the observation of Dr. Percival, eleven "were decidedly scrophulous."

Among the most common *exciting* causes of this disease in children, are injuries, inflicted on the head by blows or falls. It has been observed, however, that injuries of this kind, rarely give rise to arachnitis, unless they are sufficiently violent to cause some degree of concussion of the brain, and my experience leads me to think, that there is truth in the observation. Suppressed discharges, and repelled cutaneous eruptions, particularly the sudden drying up of serous discharges behind the ears, is apt to give rise to this affection, more especially, when aided by the irritation of dentition, and intestinal disorder. A sudden and total suppression of the diarrhœa, which frequently accompanies dentition, sometimes excites arachnoid inflammation, and consequent dropsical effusions in the brain. Dentition is often intimately concerned in the production of this complaint. This process, when difficult, is always attended with an irritable and irritated condition of the system, and a preternatural determination of blood to the head. This, in itself, may be sufficient to excite the disease, in subjects who are predisposed to it, by constitutional habit, or from previous ill-health. It is probable, however, that dentition is seldom the sole cause of the disease; but that it most commonly acts in conjunction with other causes, especially with irritation in the alimentary canal. If, while dentition is going on, the digestive functions become disordered from improper diet, or some other circumstance, or if irritation be established in the bowels, there will be a concomitance of causes, peculiarly calculated to develope this fatal malady. The tendency of intestinal irritation to occasion an undue determination of blood to the brain, is well known. In infancy, this determination to the head, when long continued, is apt to give rise to inflammation of the brain, or the disease now under consideration. In middle age it frequently terminates in mental derangement; and in the decline of life, it is apt to result in apoplexy or palsy. It is believed by many, that arachnoid inflammation, or hydrocephalus, during childhood, is very generally the consequence of *intestinal irritation;* and there are, in fact, many circumstances, which go to confirm this opinion. In very many cases, I think it may be safely asserted, that in a large majority of instances, there are unequivocal signs of intestinal irritation, both previous and during the existence of the disease. The variable appetite—the irregular action of the bowels, with the unnatural appearances of the alvine discharges—the tumid and tender abdomen—the picking of the nose, and the pale and sickly aspect of the countenance, which so commonly precede the developement of the disease, all point to the alimentary canal as the original source of the irritation. Where this irritation exists, there is, doubtless, always a strong predisposition to the disease; and if to this be added some other exciting circumstance, such as a blow on the head, or the supervention of painful dentition, or general fever from cold—or, in short, any occurrence which gives rise either to general arterial excitement, or local irritation of the brain, the liability to the disease will be greatly enhanced. Worms, acrid secretions, and an accumulation of fecal matter in the bowels, are the most common remote causes of this disease, when it depends on intestinal irritation. The strong tendency of intestinal irritation to give rise to arachnitis and consequent serous effusion into the brain is often strikingly illustrated in *cholera* infantum. When it runs into a chronic or subacute form, this disease frequently terminates fatally, under all the characteristic symptoms of the last stage of hydrocephalus. In two instances of this kind, in which I had an opportunity of a post mortem examination, I found the traces of arachnoid inflammation unequivocal, with copious serous effusion into the ventricles, and between the circumvolutions of the brain.*

Hooping cough, when it occurs in subjects naturally predisposed to the disease, more especially, when it is associated with a strumous diathesis, or a loaded and irritated state of the intestines, is no uncommon exciting cause of arachnitis. The violent and frequently recurring spells of coughing, forces the blood powerfully into the vessels of the brain, and where the supervention of the disease is favored by previous predisposition, or some other concomitant circumstance, may thus readily give rise to arachnitis. During the period of convalescence from measles and scarlatina, children seem to be much predisposed to this disease.

While we give all the importance to intestinal irritation, as a cause of arachnoid inflammation, which it unquestionably demands, we must bear in mind, that this same cause sometimes gives rise to a form of cerebral oppression, strongly resembling the last stage of arachnitis, but which is, nevertheless, wholly unconnected with cephalic inflammation. The determination to the head, in such cases, results merely in a state of strong venous congestion of the brain, giving rise to a somnolent and oppressed state of the system, which may be readily mistaken for hydrocephalus. (Cheyne.)*

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* An interesting and striking case, in which hydrocephalic symptoms were produced by organic disease of the intestinal canal, is related in the Med. and Chir. Review, July, 1826. p. 102.

Treatment.—There are three principal indications to be kept in view in the treatment of arachnoid inflammation—viz. 1. to moderate the general febrile excitement; 2. to obviate sanguineous congestion and inflammatory irritation in the brain; 3. to remove those causes of irritation, which tend to produce and sustain a preternatural determination of blood to the brain.

The disease is not often detected in its incipient stage, on account of the gradual and insidious manner, in which it usually makes its approaches. When it does become an object of medical attention at this early period of its course, every effort should be made to remove the sources of irritation, and especially to obviate all undue determination of the blood, to the head. With this view, it is of the utmost importance to attend to the state of the alimentary canal; for it is in the stomach and bowels, especially that the primary irritation and exciting cause of the cerebral congestion most commonly exists.

Purgatives are, accordingly, the most valuable means we possess, for preventing the full developement of the cephalic inflammation at this early period of the disease. The bowels should, in the first place, be freely evacuated, by an efficient mercurial cathartic, and afterwards kept in a loose state by the daily administration of small doses of calomel, succeeded by a moderate portion of some mild purgative. From three to four grains of blue pills, or a few grains of calomel should be given in the evening, and followed next morning by a weak dose of epsom salts, rhubarb, or of castor oil, and continued until the alvine discharges assume a natural appearance. At first, it may be necessary to repeat these aperients daily, for four or five days in succession, after which it will, in general, be sufficient to administer them every second, third, or even fourth day, according to the urgency of the symptoms. Mercurials are particularly useful in the incipient stage of this complaint, not only as aperients, but as means for correcting the functional torpor of the liver, which almost invariably attends the early stages of the disease. In addition to these means, especial attention must be paid to the proper regulation of the patient's diet. The appetite is sometimes very craving, during the incipient stage of the complaint, and it requires much care and vigilance to prevent children from taking improper food, or overloading their stomachs. It is of the utmost importance, to guard against these errors, as they never fail to accelerate the progress of the disease, and to render the most judicious remediate treatment abortive. The most simple, unirritating and digestible articles of nourishment alone must be allowed: such as boiled milk, barley-water, arrow-root, boiled rice, oat-meal gruel, weak beef or chicken tea, &c. All stimulating drinks must be carefully avoided. If dentition is going on, and the gums are swollen or inflamed, they should be freely divided down to the advancing teeth. Much benefit may sometimes be derived during the initial stage of the disease, from the application of blisters behind the ears, or on the back of the neck; and in cases preceded by the drying up of discharging sores behind the ears, or on the head, blistering, in this way, should never be neglected.

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* Some writers contend, that hydrocephalus is almost invariably a sympathetic affection. Dr. Yates in particular, thinks that this disease has almost invariably its origin in the irritation of some organ remote from the brain. Spurzheim admits, that the primary irritation is frequently located in the abdomen; "yet anatomical dissections have convinced me," he says, "that, in the greater number of cases, the morbid appearances of the abdomen are secondary of the cerebral disease."

When the disease is once fully developed, prompt and decisive antiphlogistic measures, in conjunction with revulsive and derivative applications are indispensable. Blood-letting ranks, of course, among our most efficient remediate means at this period of the disease, more especially, when the encephalic inflammation has been caused by some injury inflicted on the head, or when it is the consequence of some general cause, such as cold. In instances of this kind, the pulse is almost invariably tense, quick, resisting and active; and nothing but prompt and very efficient blood-letting will make any decided impressions on the disease. Whenever the pulse is firm, and active, a sufficient quantity of blood should be taken away at once, to check, conspicuously, the momentum of the circulation. I am inclined to believe, that if bleeding were carried to the extent of producing an approach to syncope in the commencement of the inflammatory stage, our efforts would be more frequently crowned with success than they unfortunately are. "The temporal artery, or a vein in the arm, should be opened, and the blood allowed to flow, until a very obvious impression is made on the system, or until the morbid actions of the vascular system of the brain are modified or totally changed. That such an effect has taken place, may be known by a paleness of the countenance, a shrinking of the features, and a tendency to deliquium; or by a diminution of, or removal of the heat, pain, weight, or uneasiness of the head." (Mills.) The blood-letting ought to be repeated, as soon as the febrile reaction and local inflammatory symptoms rise again. In cases depending on intestinal irritation, the arterial excitement is seldom very active. Here, blood-letting, though always indicated in the early periods of the inflammatory stage, must be employed with more caution; for copious bleeding, by weakening the energies of the system, is peculiarly apt to increase the morbid sympathetic affections of intestinal irritation.

With regard to the utility of *local bleeding* in this and other forms of encephalic inflammation, different opinions are expressed by practitioners. Nearly all the French writers on this disease are decidedly in favor of the local abstraction of blood. It appears, indeed, very reasonable to expect peculiar advantages from a mode of depletion which abstracts the blood more immediately from the affected parts; and yet, in relation to the present disease, a contrary opinion has been expressed by several eminent practitioners. Mr. North, in his work on the convulsive affections of infants, observes, "that he never found well marked symptoms of determination to the head, removed by leeches, however freely they were applied." In cases in which the cephalic determination depends on *intestinal irritation*, this observation is, perhaps, well founded; for the blood which may be thus removed from the vessels of the head, will be immedidiately replaced by the continued preternatural afflux of this fluid. It must be observed, moreover, that so long as the momentum of the general circulation is considerable, local bleeding can scarcely produce any other advantages than such as would result from abstracting the same quantity of blood by means of the lancet. General bleeding is, therefore, an essential preliminary to the beneficial employment of leeches or cupping. After the impetus of the circulation has been moderated by the use of the lancet, *leeching* the temples, and along the posterior parts of the ears, is a valuable auxiliary in the treatment of arachnitis. It sometimes happens that blood cannot be obtained from a vein in the arm, and occasionally, not even from the temporal artery. In this case, the application of leeches is indispensable. They should be applied in large numbers, to the temples, occiput, and behind the ears, and the flow of blood encouraged, until a very obvious impression is made on the pulse, or a manifest tendency to syncope ensues. Dr. Mills, in his interesting paper on this disease, strongly recommends leeching, immediately after venesection, "in order to postpone the period of the exaçerbation, or break the chain of diseased action. I have observed that these two modes of drawing blood, when successively employed, make a greater impression on the disease than either of them is capable of effecting when singly had recourse to."

Purgatives are among our most useful means for subduing this disease. When the bowels are loaded with irritating substances, and the cerebral affection is symptomatic of intestinal irritation, laxatives are, in truth, the main stay of our hopes. They are, indeed, almost equally useful in idiopathic arachnitis; for besides their effect in evacuating irritating causes, they tend, very particularly, to diminish the afflux of blood to the brain, and to moderate the general momentum of the circulation. "Should we ascertain," says Dr. Cheyne, "that the alimentary canal is torpid, and imperfectly performing its functions, admitting an accumulation of feculent matter; or that the secretions flowing into it are vitiated or diminished in quantity—circumstances which we ascertain by the peculiarity in the appearances, or the pungent fetor of the stools, we must, by steadily pursuing the purgative plan, endeavor to effect a change; for while this is produced in the appearance of the stools, we are effecting a most important change in the hepatic system, alimentary canal, and all the parts including every organ essential to life, which is connected with them." In symptomatic cases, depending on primary irritation of the alimentary canal, the *milder* purgatives after the first thorough evacuation of the bowels, will, in general, be more beneficial, than the repeated use of very active purges. Frequent purging, by the more active and irritating cathartics, though at first apparently useful, tend, ultimately, to increase the inflammatory irritation of the bowels, and consequently, the cerebral affection. It must be recollected that intestinal irritation is not always dependent solely on the presence of acrid or irritating substances in the bowels. The mucous membrane of the alimentary canal may be in a state of sub-acute inflammation, or of high vascular irritation. In cases of this kind, the milder laxatives are manifestly more appropriate than the more irritating articles of this class, since they are sufficient to evacuate the contents of the bowels without causing injurious irritation. Undoubtedly, the first purgative should be sufficiently active, to evacuate the intestines freely. From five to six grains of calomel, followed in a few hours, by infusion of senna and manna, or a suitable portion of epsom salts, will answer well for this purpose. The bowels must afterwards be regularly evacuated, so as to procure three or four discharges daily, by the use of small doses of calomel, promoted by castor oil, and laxative enemata.

In idiopathic arachnitis, however, the intestines are generally very torpid, and can seldom be sufficiently moved by the milder purgatives. In cases of this kind, it is often necessary to resort to large doses of the most active cathartics, in order to procure adequate evacuations from the bowels. The same difficulty sometimes occurs, in cases attended with a great accumulation of fecal matter in the intestines. *Calomel* should always enter largely into the purgatives employed in this disease. Independent of its aperient effects, its constitutional or specific influence, if early obtained, is sometimes attended with great benefit. From one to three grains may be given every three or four hours, according to the age of the patient, with an occasional dose of of castor oil, infusion of senna, or epsom salts. Where there is reason to suspect the presence of worms in the intestines, anthelmintics should be employed, in conjunction with purgatives. An infusion of spigelia with a small portion of senna, may be used with a prospect of much advantage in such cases. In some instances the stomach is so irritable in this disease, that no articles will be retained a sufficient time to operate on the bowels.

Where this state exists, we must endeavor in the first place, to allay the gastric irritability, and this may in general be effected by minute doses of calomel and ipecacuanna: the one sixth of a grain of the former, in union with one-fourth or one-third of a grain of the latter, has repeatedly succeeded in my hands to restrain the tendency to vomiting in this disease.

Mercury, as has been already observed, is undoubtedly a remedy of valuable powers in the treatment of this affection. Doctors Percival, Dobson, Rush, Cheyne, Mills, not to mention many other names of great celebrity, have related instances which yielded to the influence of this potent remedy. Employed with a view to its constitutional operation, mercury often contributes very powerfully to the reduction of visceral inflammation; and experience has shown, that in the present affection, it deserves to be regarded as one of our most valuable remedies. It is, in general extremely difficult to procure the constitutional influence of mercury, to an obvious extent, in very young children; and hence, to obtain this desirable object sufficiently early to derive decided advantage from it, many have advised the use of mercurial frictions at the same time that calomel is administered internally. Dr. Mills of Dublin, strongly recommends the use of calomel in union with opium, "as soon as a check has been given to the disorder of the head," by venesection, leeching and purgatives. "The good effects," he says, "of a combination of these remedies, seem to depend on their power of equalizing the circulation, increasing the secretions, and exciting the action of the cutaneous vessels." I cannot bring to my recollection a single instance, in which this remedy, when judiciously administered, after depletion, was followed by disagreeable consequences; and in cases unaccompanied by great irritability of the stomach, its powers are occasionally increased by the addition of small quantities of ipecacuanna, or antimonial powder."* The "watery extract," he thinks, is decidedly the best preparation of opium for this purpose. "It procures rest, diminishes pain and irritation, and diffuses throughout the frame an agreeable sensation, at the same time that it is devoid of any narcotic or nauseating quality, and does not cause vertigo, pain, or a sense of fulness in the head." My own experience enables me to bear testimony in favor of this preparation; for I have seldom known it to produce the disagreeable effects that are so apt to follow the use of laudanum or opium, in its ordinary state.

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* Transact. of the King and Queen's College of Physicians in Ireland. Vol. v.

Dover's powder, also, has found advocates as a remedy in this disease. Drs. Brooke, Percival, Cheyne, and Crampton,* all speak favorably of its employment in hydrocephalus. After adequate depletion and purgation, in cases connected with *intestinal irritation*, small doses of this composition often prove highly serviceable, by allaying general irritability and inducing a gentle diaphoresis. It should be observed, however, that in the idiopathic form of the disease, opiates of every description, must be carefully avoided, as their tendency to increase the flow of blood to the brain, could hardly fail to prove very injurious. When preternatural determination to the head depends on a remote focus of irritation—as in the mucous membrane of the bowels—opiates, by diminishing nervous excitability as well as local irritation, will frequently reduce, also, the irregular determinations which depend on such irritations. It is in cases of this kind only, that we may venture on the exhibition of Dover's powder, and not in these instances until the impetus of the circulation has been moderated, and the alimentary canal well evacuated.

Dr. Stocker, of Dublin,† speaks very favorably of the use of *James' powder* in hydrocephalic affections. According to his observations, it tends, very considerably, to lessen the determination of blood to the brain. It should be given in small but frequent doses, and may be very properly administered in union with calomel. Dr. Monro states that he has cured several cases of this disease by a plaster composed of tartar emetic and wax ointment, applied to the head, in conjunction with the internal use of calomel combined with James' powder. He states, that he has found this combination peculiarly useful, in restoring the healthy action of the bowels. *Tartar emetic*, also, has been used with great advantage in this disease. Laennec, has reported some cases of acute hydrocephalus, in which he administered twelve grains and more of this article during the day, with complete success.

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* Transactions of the Associat. of Fellows and Licentiates of the Queen's College of Physic in Ireland. Vol. vii.

† Dublin Medical Essays, 1806.

Mr. Newnham asserts, that *green tea* has a strong tendency to lessen morbid vascular excitement in the brain. "In the acute irritation of the membranes of the brain in children," he says, "the efficacy of green tea has been strongly marked in my practice. Exhibited during the early symptoms, as soon as a sufficient quantity of blood has been taken, and before effusion occurs, it has proved a more powerful means than any other we possess, of controlling the morbid action, which, if suffered to proceed to its second stage, is scarcely to be overtaken by any treatment."*

Nothing is more common in the treatment of this disease, than the application of blisters to the shaven scalp; but this practice is, I conceive, of very doubtful propriety. I have always preferred placing them on the back of the neck or behind the ears, while ice or cold water is applied to the top of the head, and warm or rubefacient applications made to the feet. Dr. North, whose interesting work I have already mentioned, observes, "that blisters to the head are decidedly prejudicial in the convulsive diseases of infants;" and the same observation is applicable, I think, to the disease under consideration. The application of ice or iced water, in the manner mentioned in the last chapter, may be accounted a very useful auxiliary in the treatment of arachnitis, and to favor its revulsive influence, warm or stimulating applications to the feet may be usefully employed. Dr. Regnault recommends in very strong terms, the application of *moxa* in this complaint;† and its known efficacy in subduing deep-seated articular inflammation, justifies the expectation of considerable advantage from its use in arachnoid inflammation. Neither this application nor blisters, however, should be resorted to, until the activity of the circulation is reduced by general and local blood-letting. The tartar-emetic ointment also may be very beneficially applied. (Monro.)

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* Med. Chir. Rev. July, 1827.

† Medical and Physical Journal, Vol. xi. p. 16.

CHAPTER XXXIII.

PERITONITIS. ASCITES.*

SUBACUTE or chronic inflammation of the peritoneum, and consequent effusion of serum into the cavity of the abdomen, is not a very uncommon disease among children. Its progress through the first or inflammatory stage, is often so obscure as to escape particular attention, until effusion has taken place, and the abdomen has become tumid and tense. In many instances slight pains are occasionally experienced in some part of the abdomen, which are usually ascribed to flatulency or disorder of the bowels. The patient manifests a sullen and fretful temper, and is disinclined to engage in the usual amusements and sports of children. When pressure is made on the abdomen, a sensation of soreness is felt, in certain parts, generally about the umbilical region; and the same effect sometimes results from coughing, sneezing, or any sudden concussive motion of the body. At night the patient is restless, and his sleep is broken and "of shorter duration than formerly." The face and whole surface of the body are pale, and the countenance expressive of discontent, suffering and languor. The appetite is variable; the tongue covered with a white fur along the middle, with nearly clean and pale-red edges; the bowels are irregular, being sometimes costive, and at others affected with diarrhœa. In cases of this kind, the pulse is seldom perceptibly affected in the forepart of the day; but in the afternoon, and particularly towards evening, it generally becomes somewhat accelerated, contracted, quick and sharp. The surface is seldom above the natural temperature, except during the slight evening exacerbations, when it becomes preternaturally warm and dry.

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* Dr. H. Wolff, of Bonn, is I believe, the first who has described this disease, as it occurs in infants. He describes it as "a peculiar form of ascites in children," in a paper published in Hufeland's and Osann's "Journal des practischen Heilkunde" for May, 1829. I have not seen Dr. Wolff's memoir on this subject; and avail myself of an interesting review of it, published in the 7th vol. of the North American Medical and Surgical Journal.

The disease does not, however, always commence and proceed in this obscure manner. In some cases, "the pain in the abdomen is constant, severe, and much increased by external pressure, and is attended with vomiting, a hot skin, a quick, firm and contracted pulse," and great muscular debility.

After these symptoms have continued for an indefinite period, varying from five to fifteen or twenty days, effusion begins to take place into the cavity of the peritoneum, and the abdomen gradually becomes enlarged. The nature of the abdominal distention is rendered manifest by the fluctuation produced by percussion. If the progress of the disease be not interrupted, "the abdomen gradually increases in size; the inferior extremities become emaciated; the skin at the upper and inner part of the thighs, hangs in folds; the fluctuation of the abdomen becomes less perceptible as the disease advances, while the tumefaction continues unabated. Every part of the body, with the exception of the face, becomes emaciated; the little patient loses rapidly its strength; the lower extremities are no longer able to bear the weight of the body: in the midst of these symptoms, the appetite may, however, continue, or even be increased. The bowels are in general variable, being at one time affected with diarrhœa, at another constipated, or at least seldom opened. A febrile excitement now occurs, and the child, in a state of extreme marasmus, sinks gradually into its grave." (Wolff.) The writer just quoted, mentions a peculiar appearance of the countenance occurring in the second or hydropic stage, which he regards as one of the most certain diagnostic signs of the disease. "The appearance referred to, consists of a tumefaction of the skin at the root of the nose, immediately between the eyes." "The parents of my patients," he says, "frequently noticed a change in the expression of the countenance, without being able to say in what it consisted; but as soon as I directed their attention to the tumefaction of the skin at the spot mentioned, they agreed with me, that the change in the appearance of the child's countenance arose from it, and were surprised, they had not discovered it themselves.

Causes.—This disease appears to be frequently the consequence of gastro-intestinal irritation; or rather of mucous inflammation of the alimentary canal—the inflammation passing from the mucous membrane, to the peritoneal covering of the bowels. Crude, irritating and indigestible articles of nourishment, are probably the most common exciting causes of this affection in children. I have witnessed two cases within the present year, both of which were preceded by prominent symptoms of intestinal irritation, for many weeks before the peritoneal affection became obvious. In adults, I have met with several very striking instances of subacute peritonitis, and consequent serous effusion into the abdomen, brought on by acute mucous inflammation of the bowels, in consequence of irritating ingesta. There are, doubtless, various other causes which may give rise to this affection in children. It may be the result of acute or chronic inflammation of the solid abdominal viscera—particularly of the spleen and liver. Blows and other injuries inflicted on the abdomen; repelled cutaneous eruptions; cold, and perhaps protracted constipation, may give rise to the disease.

When properly treated during the first stage, this disease may, in general, be readily subdued. "Even in the first period of the stage of effusion, it is by no means incapable of being arrested; but when neglected, mismanaged, or submitted to medical treatment only in the advanced period of the second stage, as is but too commonly the case, death is the ordinary result." The great difficulty, indeed, arises from the gradual and obscure manner in which the disease frequently advances through its inflammatory stage, so that very few cases are recognized or properly understood, until effusion has taken place. During the first or inflammatory stage, the symptoms are usually ascribed by the parents, to worms. Anthelmintics are accordingly resorted to, which seldom fail to aggravate the disease, and to hasten its progress to an incurable state. Dr. Wolff asserts, that "most of the severe cases which had fallen under his notice, were those in which anthelmintics had been administered, either by the parents, or occasionally by a physician, on the first appearance of the symptoms, from a supposition that they owed their origin to the existence of worms in the intestines." This practice, he says, is extremely pernicious. "For although, in a few instances, worms may be discharged, yet so far from the patient's disease being removed, every symptom becomes aggravated; the pain of the abdomen increases in intensity, and is rendered more constant; vomiting is excited, the appetite is entirely destroyed, the thirst augments, the febrile symptoms are rendered more marked; and the patient is apt to suffer severe attacks of colic, soon after eating."

Treatment.—During the inflammatory stage, local depletion, and counter-irritating applications to the abdomen constitute our principal remedies. After blood has been abstracted by leeching, to an extent corresponding with the age of the patient, and violence of the local symptoms, a large blister should be applied to the abdomen, and kept discharging by dressing it with mercurial ointment. I have never in children derived any decided benefit from pustulation with tartar emetic ointment. The warm bath, and fomentations to the abdomen, may also be used with advantage. Internally, small doses of calomel and ipecacuanna, should be regularly administered. A fourth of a grain of each may be given three or four times daily; but if no mercurial ointment is used externally, the quantity of calomel should be increased to a half a grain. Should the calomel not keep the bowels sufficiently loose, a small dose of castor oil must be occasionally administered. To allay general irritation, a few grains of Dover's powder may be given in the evening with much advantage. Throughout the whole course of the disease, the patient should be restricted to the blandest and simplest articles of nourishment. Without strict attention to this important injunction, there can be but little hope of a cure in this affection. Arrowroot, tapioca, sago, rice, boiled milk and crackers, barley water, weak chicken tea, &c., constitute appropriate articles of diet. In the second stage, that is, after effusion has taken place into the abdomen, leeching may still be useful if the abdomen be tender to pressure. At this period of the disease, much benefit may sometimes be derived from frictions on the abdomen, with mercurial ointment. Laennec and Velpeau speak in the most favorable terms of this practice; and my own experience has furnished me with unequivocal evidence of its usefulness. Dr. Wolff strongly recommends calomel, with very minute portions of digitalis; and at a still more advanced period, "digitalis with cream of tartar in the form of powders." He asserts, that under the use of these remedies, most of the patients he treated became convalescent, at the end of two, three, or at most four weeks. Whether mercury be used externally, as recommended by Laennec, or internally, *digitalis*, is doubtless a most important auxiliary, and should never be omitted after effusion has taken place. Irritating diuretics, and drastic purgatives, are extremely improper. They never fail to aggravate the disease.

[It not unfrequently happens, that this disease is protracted by a scrofulous state of the mesenteric glands. In such cases, it has been found signally beneficial to keep the entire abdomen covered with an ointment of iodine, or hydriodate of potash, or the simple cod-liver oil, giving, at the same time, small portions of the hydriodate of potash internally. It has also been proposed to cure cases of a chronic nature, by the injection of tincture of iodine into the cavity of the abdomen. I find, too, that Monro mentions the use of injections of brandy and water for the same end. The practice does not seem advisable for children, and it is safer to rely on the internal and external exhibition of some form of iodine.

Touching the use of digitalis, my opinion is unfavourable, excepting as an external appliance. It is not generally known to the profession, that the tincture or infusion of digitalis, rubbed into the abdominal surface, will operate very efficiently as a diuretic, without incurring the hazard that attends the internal administration of the medicine. Half an ounce of the infusion, or tincture, may be rubbed into the surface, morning and evening, taking care to cover the parts with warm flannel.]

CHAPTER XXXIV.

VACCINA. VACCINE DISEASE.

Much uncertainty still hangs over the origin of the vaccine disease. The opinion that it is derived from the complaint in horses, denominated *grease*, is sustained by very imposing, though not conclusive, evidence. We have excellent authority for believing, that inoculation with the virus of *grease*, occasions an eruption in the human subject and cow, precisely similar to that arising from vaccina. Loy, Sacco,* Decarro of Vienna, and Frise, director of vaccine inoculation in Silesia, have all performed this experiment, according to their several statements, with perfect success; and so well assured were the two latter gentlemen, of the identity of the two infections, that it is said they used indiscriminately the matter of *grease* and of vaccina for inoculation. Cazenane met with two cases in the hospital of St. Louis, of true vaccine disease on the hands of grooms, having the care of horses affected with *grease*. By the application of the recent blackish matter of this complaint, to the raw surface of a sore on the teat of a cow, Ring succeeded without difficulty in producing genuine vaccina. The same gentleman publishes a letter from Mr. Rankin, wherein is related a case of pustular disease, closely resembling the vaccine affection, produced on the hands and face of a farmer by the virus of the equine disorder. Besides, it would seem probable, that persons infected with a pustular disease from this source, enjoy an immunity from the contagion of small pox. Dr. Jenner has recorded a case of this kind. There can be no doubt, however, that further and more careful observations are requisite to the formation of a correct judgment on this point. Dr. Jenner supposes, that the infection of *grease* is transmitted through the intervention of the male domestics, who, after dressing the heel of the horse, proceed without cleansing themselves to aid in milking the cow. But, in several countries where vaccina is prevalent, it is well known that the grooms have nothing to do with the offices of the dairy; and in America, where horses and cows are attended to by different persons, the latter are sometimes affected with the disease, though running in pastures from which the horse is excluded. These facts, though they do not disprove the similarity of the two viruses, throw many difficulties in the way of accounting for one as the consequence of the other.

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* Neue Entdeckungen uber die Kuhpocken, die Mauke u. Schaafpocken. Translated from the Italian by W. Sprengel. 1813.

It is now well known that sheep are subject to an eruptive disease about the mouth and head, the matter of which being inoculated, will produce effects very similar to those of *grease*. It is also affirmed, that persons, to whom this infection has been communicated, are rendered insusceptible to the contagion of variola. We find this fact stated in a letter, addressed by Mr. W. Bruce, consul at Bushire, to Erskine of Bombay. After very extensive and cautious enquiry, he felt justified in yielding full credence to the report of several tribes of the natives, that those of them who attended to the flocks, were not unfreqently affected with an eruptive malady, caught from the sheep amongst whom it widely prevailed, and were thereby completely secured against the attack of small-pox. Sacco and Richter likewise bear testimony, that inoculation with this infection confers on the human subject an exemption from the contagious influence of variola.

The curious circumstances we have mentioned in relation to the marked affinity subsisting between the various eruptive disorders furnish no slight grounds for the opinion, that they are all essentially identical in their nature, and derived from the same ultimate source. The hypothesis with regard to variola is, that it was originally nothing more than the cow-pock, or the *grease* of horses in Arabia, transferred casually or otherwise to the human system, and that by such transference and by its continuous propagation through the human species, it gradually deteriorated, until it had acquired all the virulence and activity of what is now termed small-pox.* This hypothesis is by no means extravagant. It would seem from experiment, that the milder sort of small pox under proper management, may be made to assume by successive inoculations so meliorated a form as hardly to be distinguished from vaccina. Dr. Adams inoculated a certain number of children, with lymph taken from the pustules of a mild variety of variola, denominated by him the *pearl sort.* With the matter of the mildest of the resulting cases, he inoculated a second number, and so on, till he produced a small pox so meliorated as to resemble the vaccine disease. If small pox can thus be made to take on the gentle nature of the vaccine disease, the inference is, that vaccina under certain circumstances may have acquired all the virulence of the variolous contagion. Another argument in favor of the identity of the two affections, grows out of the commonly received fact, that two diseases, arising from essentially distinct contagions, cannot exist simultaneously in the same individual. If a subject for example, be inoculated at the same time with the virus of small pox and that of measles, the influence of the one will be entirely suspended, until the other has commenced and finished its course, when it too will develope itself and run its usual career uninterruptedly. Now if the matter of vaccina, and that of variola be inserted at once in separate parts of the same body, the eruptive distemper resulting, will pursue a *simultaneous* course, exhibiting precisely the same character, as if their respective viruses had been inoculated at different periods. This is probable evidence of their original identity, how dissimilar soever they may have been rendered by accidental circumstances. But positive evidence is not wanting to sustain this point. Cases are recorded where variolous matter inserted in the udders of cows, produced in them a pustular affection, not to be distinguished from cow-pox. This observation is made by Richter on the authority of Garsner.† We may also remark here, on the authority of Da Lisa, that sheep, inoculated with the virus of variola, are protected entirely from what is called sheep-pox. Inoculation in them is said to produce but one pustule at the point of insertion.* If we may rely on the correctness and veracity of Dr. Ozaman, of Lyons, and more recently, of Dr. Sunderland, of Barman, the original identity of vaccina and variola, is established beyond doubt. The former in a paper read in the French Academy of Medicine, in July, 1830, asserts, that the inoculation of variolus matter, mixed with fresh cow's milk, will develope an eruption similar in all respects to that occasioned by the vaccine virus, and will fully answer for the inductions of the usual vaccine disease.† Dr. Sunderland's experiments‡ would seem still more conclusive. The following experiment performed by him is so interesting, we will give it in detail. A woollen bed cover is permitted to lay on the bed of a patient who has died of small-pox in the suppurative stage, or who, placed in a narrow and badly ventilated apartment, is suffering from the disease in a considerable degree, until it is well saturated with the contagion. It is then rolled up, wrapped in linen, and spread for twenty-four hours on the back of a cow, in such a way that the animal cannot throw it off. In the same manner, it is extended on the back of each of three other cows, for the same length of time; after which it is so suspended in their stall, that they may constantly inhale the contagious effluvia as they arise. In the course of a few days the animals become sick and feverish; and on the fourth or fifth day, a pustular eruption breaks forth upon the udders and other parts, covered with hard skin and displaying the usual appearance of the vaccine disease, soon becomes filled with lymph. Inoculation with this lymph, which precisely resembles the matter of genuine cow-pock, will produce perfect vaccina.

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* Dictionnaire des Sciences Medicales.

† Speciell Therapie.

Symptoms and Progress of Vaccina.—There are two varieties of vaccina, the *casual* and *inoculated.* The casual cow-pock is apt to affect the joints and tips of the fingers of domestics, having the care of cattle laboring under the vaccine disease. It is always more severe than the inoculated variety, on account of the number of vesicles produced, and the membranous, rigid structure of the parts involved in the eruption. Inoculated vaccine is, in general, indicated by one pock alone, and its whole course may be divided into two periods.

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* Mediz. Chirur. Zeit. 1809. No. xliii. Salsbury.

† Rev. Encyclop. Aout. 1830.

‡ Journal der Praktischen Heilskunde, Jannar. 1831.

1st. The first period commences towards the close of the second day after the insertion of the virus, at which time may be discerned a minute point of inflammation at the spot where the puncture was made. This point is more distinct on the third day, and on the fourth, it has the form of a very small pimple, surrounded by a faint and narrow inflamed areola. There is a gradual enlargement of the pimple, and on the fifth day, it begins to display a perfectly regular and circumscribed outline with a flattened surface, and a small depression at the centre, somewhat darker than the rest of the surface,—an appearance it retains throughout its whole subsequent course. The pimple about this time becomes a vesicle, containing a limpid fluid, and presents a dull whitish aspect. From the fifth to the ninth day, the circumference of the pock continues to enlarge, without its elevation being perceptibly increased, so that its flattened appearance becomes still more remarkable.

2. The second period begins at the full maturity of the pustule, which takes place on the ninth, when constitutional derangement, if any occurs, is apt to supervene. In some instances, the axillary glands at this period become irritated and swollen, and the patient complains of drowsy languor and faint creeping chills, alternating with flushes of heat. Constitutional symptoms are not unfrequently altogether absent. By the tenth or eleventh day, the belt of inflammation around the pustule, that began on the eighth day to widen, has become a broad, beautiful and vividly red areola encircling the pock. The areola is now perfect, and attended with some degree of tumefaction and hardness. The central indentation of the pustule begins, on the eleventh day, to assume a darker hue, and this darkness gradually spreads towards the circumference: so that by the fourteenth day, the surface of the pock is transformed into a brown scab, which grows darker and darker, acquiring a deep brown or mahogany color. In a few days more, the circumference of the scab becomes loosened, but the centre still retains its attachment, till between the

third and fourth week from the time of vaccination: the whole then falls off, leaving a slight, regularly defined depression in the skin, and a scar which is indelible.

Deviations.—Such is the *ordinary* course of the disease, for it is occasionally subject to deviation. The period, for example, intervening between the insertion of the virus and appearance of the pustule, is sometimes prolonged to the tenth, fifteenth or even twentieth day. In some cases, the whole course of the disease is completed in eight or nine days, well-formed lymph being produced by the fourth day. When the umbilicated indentation in the centre of the pustule is wanting, there may be two pustules, partially blending with each other. It is seldom that inoculation produces more than one pock, but occasionally one or more smaller pustules manifest themselves in the vicinity of the primary one. Instances indeed have occurred, where they appeared in considerable numbers on different parts of the body. In the report of the central vaccine committee of France in 1818, 19, it is stated that a spontaneous eruption of many pustules had occurred in several cases after vaccination; and moreover, that the matter of this eruption had the power of inducing as perfect a disease as that excited by the virus of the primary pock.

Considerable inflammation sometimes supervenes on the day succeeding the vaccination, and an elevation of the cuticle takes place at the point where the puncture was made. In this case, the failure of the operation may be considered certain. The inflammation, after continuing a day or two, speedily subsides, without leaving any local affection.

Instead of a vesicle, a true pustule is occasionally formed, the inflammatory action arising on the day after the vaccination, or, at the furthest, on the succeeding one. A well-defined areola encircles the pustule, in which instead of a depression, there is a conspicuous elevation of the centre above the ridges. Its increase is rapid, and about the fifth day, it is converted into a yellowish brown scab, which soon disappears without leaving any scar. In this case, also, the operation is abortive and should be repeated.

Spurious Pock.—According to Willan, there are three varieties of spurious pock. In the first, though the vesicle is perfect, there is no areola around it on the ninth or tenth day. In the second, the vesicle is much smaller than the genuine vesicle, and is pearl-colored, flattened, without a rounded or prominent margin, with a hard, inflamed and slightly elevated base, and an areola of a dark-red color. The vesicle in the third variety, is small and pointed, with a very extensive, pale-red areola. The areola in the two latter varieties, are observable on the seventh or eighth day, and disappear about the tenth. A very small scab is then formed, which is not so regular in its shape as that of the true vesicle. The spurious disease may arise from the following causes; 1st. The existence of some cutaneous distemper, capable of counteracting or perverting the action of the genuine vaccine virus. 2d. Certain idiosyncrasies, or a depraved condition of the system, vitiating or impeding in some way the regular operation of the virus. 3d. Vaccination with spurious matter, or with genuine matter whose virtues have been impaired by long keeping; or with matter taken from a true vesicle at too late a period. Beside these, friction with the clothes, or by other means, so as to cause a rupture of the vesicle, and the frequent abstraction of its lymph by punctures, may be considered as depriving the disease of its genuine character.

The spurious and true cow-pox sometimes pursue their course simultaneously in the same individual, in which case it does not seem that the protective power of the genuine virus is in any degree diminished.

Diagnosis.—In attempting to distinguish true vaccine from false, we should carefully observe the following particulars:

1st. In the genuine disease, inflammation, saving that which occasionally arises from the irritation of the puncture, is scarcely observable until the third day, and sometimes considerably later. On the other hand, the spurious affection is marked by an elevation of the cuticle and no slight degree of inflammatory action, so early as the second day.

2d. The small inflamed point, in true vaccina, appearing in two or more days after the insertion of the virus, has a gradual increase until the seventh day after its first manifestation, when it is in a state of perfection. The spurious pustule becomes ma tured, and finishes its course in, a much shorter time; the scabbing commences on the third or fifth day after the development of inflammation.

3d. A beautiful, circular, and well-defined areola almost always surrounds the pustule of genuine vaccina, and is seldom perfect until the seventh or eighth day. In the false disease, the pustule is begirt with an *irregular*, superficial inflammation, supervening on the first or second day after the appearance of the pustule; and the pustule itself is more like a common festering sore occasioned by a thorn, than a pustule excited by the vaccine virus.

4th. The genuine pustule is perfectly and regularly defined, with a flattened surface, and a slight central indentation, and contains a colorless, limpid fluid. The spurious pock is more elevated, not depressed in the centre, is irregularly circumscribed, and contains an opaque purulent matter.

Remediate Treatment.—General remediate treatment is rarely required in the inoculated form of vaccina. Febrile excitement occasionally exists, and even a slight exanthema may appear, in which case we should direct a low diet, diluent drinks, and a gentle aperient, together with spiritus mindereri or sweet spirits of nitre. The vesicle should be especially shielded from friction, whereby it is apt to be greatly irritated, particularly about the time when the areola is making its appearance. From friction or other cause, the inflammation and swelling around the pustule sometimes become so severe as to demand immediate relief. Cold water, a weak solution of sugar of lead, or poultices made of lead-water, should be applied to the part, to allay pain and inflammation, at the same time that laxatives, with some of the milder refrigerant diaphoretics are given internally to subdue febrile irritation.

THE RELATION OF VACCINA WITH OTHER DISEASES.—I have thought it proper to defer until now, the consideration of the relation of the vaccine disease with other affections, that I might present in a connected form all I have to say on this part of our subject. It was early noticed, that the infection of vaccina had a tendency to correct a general depravation of the system and to remove various chronic complaints, especially those of the lymphatic and cutaneous systems. There are well authenticated cases, in which crustea lactea, scrophulous ophthalmia and tumors, and certain varieties of scaly tetter have been entirely cured by the constitutional influence of the vaccine virus. Herpetic eruptions, after vaccination, not unfrequently assume an appearance resembling that of vaccine pustule, and fade away with the desiccation and falling off of the scab. Violent whooping cough has been arrested at the moment of the appearance of the eruption, and permanently cured. Of the power of vaccina to moderate and abridge the course of pertussis, I have myself witnessed many examples. In this respect, it differs greatly from both casual and inoculated small pox, which have been known to excite the active developement of disorders, to which there existed previously a latent disposition. In accounting for these peculiar effects of the vaccine disease, we can hardly suppose that its influence over other disorders is specific in its nature, otherwise it would be more constantly and uniformly exerted. It may be considered rather the result of an irritation, universally diffused throughout the system, penetrating the minutest portion of living fibre; for it is well known that the creation of a comparatively slight general irritation is sufficient, at times, to relieve a graver disorder already existing. We may observe, that the meliorating influence of vaccina over other complaints, is generally more manifest, when a considerable degree of irritation is produced. Hence, when such an influence is desirable, it may be proper to insert the virus by several punctures.

The diminution in the prevalence of small pox, occasioned by the general introduction of vaccination, is, if we may believe Dr. Watt, very curiously associated with the increase of measles. His observations, which are restricted to Glasgow, go to prove, that the increase of measles in that city, since the adoption of vaccination, has borne a nearly equal proportion to the decrease of small pox. If such be the fact, it should perhaps be ascribed to peculiar local causes, especially as further observations have afforded no countenance to his opinions.

As a prophylactick against that terrible scourge the small pox, the virtues of the vaccine disease are now happily and extensively known.

Origin of Vaccination.—Dr. Jenner has the inestimable honor of introducing this operation to the notice of the world; but long before his time, it had been known by agriculturists in some parts of England, that an infection in the hands and about the joints of the fingers received from a cow laboring under what is now called vaccina, would confer an immunity against the small pox. Benjamin Jesty, a farmer of Downbay, in the isle of Purbeek, so early as the year 1774, inoculated himself, wife, and two sons, with virus taken from the pustules on a cow's udders, suffering with the vaccine disease. He did this, to protect himself and family from the attack of small pox, at that time prevalent in the vicinity. The operation was perfectly successful.* But the prophylactick power of the vaccine disease had not only been previously known in the dairy counties of England, but also in different parts of Europe, and, if we may rely upon the testimony of Humboldt, even in several districts of South America. It has been attempted, unsuccessfully as we think, to prove that the first suggestion of the expediency of inoculation with vaccine virus, was made by a native of France to an English physician, and by him communicated to Dr. Jenner. But from whatever source this gentleman may have derived the notion of vaccination, to him alone must be awarded the honor of its first introduction to general notice. Successful experiments were performed by him with vaccine matter, so early as the year 1796, but the result of his enquiries was not, until two years after, announced to the public. From that period on, the knowledge of the virtues of vaccination spread rapidly throughout Europe and this country, and there is now no civilized people on earth, amongst whom its blessings have not been realized and gratefully acknowledged.

Prophylactick power.—For a while the prophylactick power of vaccination was generally thought to be complete and universal, and whoever presumed to hint doubts of its efficacy in any case, was sure to meet with the indignation or contempt of the profession. Since then the general sentiment has undergone a considerable change. From some cause or other, as yet unrevealed, so many well-attested cases of failure in the preventive power of vaccination have taken place, and so remarkable of late years has been the progressive increase of such cases, that the vaccine disease is no longer considered by practitioners a sufficient safeguard in every case from the variolous contagion. "This circumstance," says Dr. Gregory, "cannot be met by a reference to the fact, that small-pox once gone through does not always protect the subject from a second attack." Cases of variola after vaccination are far more frequent than second attacks of that disease. Dr. Gregory has given a table of the total number of admissions into the small-pox hospital, in ten different years. From this statement it appears, that in the year 1810, the proportion of cases of small-pox after vaccination to the whole number of admissions, was as 1 to 30, while in 1815, it was as 1 to 17; in 1821 as 1 to 4; and during the year 1823, as 1 to 3½. We may remark, however, that as this is the register of a *single* hospital, certain *local* circumstances may have occasioned the augmenting ratio of cases: no *general* conclusion can therefore be legitimately drawn from the facts set forth. The statement, moreover, may be inexact, seeing there could be no infallible method of determining whether the vaccination had been genuine and produced its constitutional effects.

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* Edinburgh Journal, vol. 1st, p. 513.

Notwithstanding these facts, vaccination must still be regarded as an invaluable means for lessening the amount of mortality, and as deserving all confidence as a protecting power against small-pox. For although it may not, in many cases, render the system wholly insusceptible to the variolous infection, yet the number of instances in which it affords *perfect* immunity from small-pox, is beyond all comparison greater than that in which it fails to afford complete protection; and even where it does not entirely subdue the susceptibility to the small-pox, it almost invariably lessens it to such a degree, as to render this latter disease so mild and simple, as in most instances scarcely to require any remediate attention.

By many it is believed, that the constitutional influence of the vaccine virus gradually wears out, until the system regains its original susceptibility to the contagion of small-pox. In opposition to this hypothesis it is remarked, that variolous cases occur with nearly equal frequency at all periods after vaccination,—as many indeed being met with at one year, as at five, ten or fifteen years subsequently to that operation. The results of experience however, are favorable to the hypothesis. Some have limited the vaccine impression to ten years. Dr. Brown has inferred from his observations, that immediately after vaccination, the antivariolous influence of the virus is nearly perfect; that in about three years afterward, the created insusceptibility is so much diminished, as readily to allow the operation of the variolous contagion; although the disease then occurring will appear in a mitigated form; that at the period of five or six years, hardly any security from small-pox is enjoyed, and so diminished is the influence of the vaccine virus, that if variola do occur, it will very nearly approach in severity to the natural disease; lastly, that the constitutional influence of vaccina cannot be depended upon any longer than six years from the period of vaccination. Dr. Leo Woolff, in an interesting memoir on this subject, has adduced facts and reasonings to show, that the vaccine influence is effaced by the constitutional changes that take place at the period of puberty. That the prophylactic power of vaccination progressively diminishes, until it is perhaps entirely worn out, I am myself much inclined to believe, from facts that have come under my own observation. But the attempt to determine its gradual subsidence by any accurate, fixed periods, must necessarily be an almost impracticable task; since it may well be supposed, that idiosyncrasies, modes of living, accidental as well as innate predispositions, and perhaps habitual extraneous agencies, may occasion many variations in this respect. The general fact or possibility of the gradual effacement of the constitutional influence of vaccina, should admonish us of the propriety of re-vaccinating, in order to renew the prophylactic impression. This practice is certainly rational, and cannot be detrimental, as a precautionary measure.

The manner of Vaccinating.—Vaccination has been performed in three ways—by blistering, incision, and puncture. The first, being apt to create an irritation detrimental to the vaccination, and the second, endangering the washing away of the virus by the great flow of blood, are now generally superseded by the method of puncture. The spot usually selected for the operation is at the lower insertion of the deltoid muscle. The posterior part of the arm of the person to be vaccinated, is to be firmly grasped with one hand, while with the other, the lancet, at whose point is a tangible drop of the virus, is to be inserted a few lines, from above, downwards. It should be continued a few moments in the puncture, and its point pressed against the lower surface of the wound. It is expedient to make several punctures, merely that the chances of a successful operation may be increased.

The character of genuine Virus.—The vaccine lymph, up to the time when it begins to desiccate, is a limpid, viscous liquid, colorless, inodorous, and of a salt, acrid taste. Exposed on a smooth, flat surface, it dries rapidly, but without losing its transparency. Chemical observation has taught us, that it is decomposed and rendered inert by the action of light and heat; and that even at the ordinary temperature, the continued influence of the atmosphere greatly impairs its virtues. To obtain the virus, the edges of the pustule must be punctured in several points. The lymph will then ooze out, and may be collected and preserved between glass plates. Jenner recommends that it should be taken just before the appearance of the areola. He thinks its virtues diminished after the manifestation of the efflorescence, and always, if possible, avoided collecting it beyond the eighth day. Of late years, and especially in this country, vaccination is most commonly performed from the scab. The virus may be preserved longer uninjured, in the form of scab, than in any other mode. Matter of six or even ten months old, if kept in this way, will readily communicate the infection. No scab, except from a perfect pustule, should be taken. It ought to be smooth, of a dark-brown, or mahogany color, and rather brittle than tenacious in its texture. When used, the margin, which is of a lighter hue than the rest, should be removed with a knife, and a portion of the remaining dark, hard, internal part reduced to powder on a glass, and moistened or dissolved in a little cold water.

In whatever way the virus be procured, we ought carefully to examine whether the person, from whom it is taken, be in a healthy state; whether he may not be the subject of some cutaneous affection, or a vicious constitutional taint. Carelessness on this point may result in incalculable injury. I have several times known obstinate and alarming cutaneous distempers communicated to children by vaccination with virus from an unhealthy person. Unprofessional people have a notion, that various troublesome eruptions are occasioned by the vaccine disease; and it is somewhat sanctioned by enlightened observation. Accidents of this kind, however, may for the most part be charged upon that carelessness, of which we have just spoken.

The condition of the person to be vaccinated.—Age generally would seem to have little or no influence on the success of this operation. Certain idiosyncrasies are occasionally met with in persons of every age, counteracting completely the action of the virus; and sometimes cases occur, in which several successive operations are requisite, before success is obtained. Vaccination is commonly performed in childhood; but, as a general rule, it should not be attempted in children under six weeks old. The constitutional disturbance, occasioned by the agency of the virus, is more considerable in mature years, than early life. The existence of disease does not generally contra-indicate the propriety of the operation, if we except herpetic eruptions and some other cutaneous disorders. Nor does dentition nor pregnancy constitute any valid objection to its performance, provided there be no severe derangement of the nervous system.

As to the season for vaccination, it appears to be equally successful throughout the year. It would seem, however, that the course of vaccina is retarded by cold and hastened by hot weather.

The fact, that important varieties and modifications of the vaccine disease are occasioned by the existence of certain cutaneous affections, is well established, and merits particular attention. Dr. James, in a paper published in the sixty-sixth number of the London Medical and Surgical Journal, states that a single serous blotch on the skin, during the progress of the vaccine vesicle may cause such irregularity, and deviation from the natural course and character of the disease, that it cannot be depended on as a prophylactic against the variolous infection. In a letter addressed by him to the medical profession generally, in April, 1821, he observes—"I have observed abrasion of the cuticle produce the same effect,—such, for example, as we find in the nurseries of the opulent, as well as in the cottages of the poor, behind the ears and on many other parts, where the cuticle is tender. We find irregularity in the vaccine vesicle, if the skin is beset with herpetic blotches, or even simple serous oozings from an abraded cuticle. A speck behind the ear, that might be covered with a split pea, is capable of disordering the progress of the vaccine vesicle."

Test of vaccination.—The increasing number of failures in the protective power of vaccination, has by many been attributed, in great part, to an insufficient inoculation. It is, therefore highly important, to ascertain, in some way, whether the constitutional impression of the virus has been procured. Bryce's method of determining was, to re-vaccinate with matter from the pustule of the first vaccination, at the end of the fifth or beginning of the sixth day after the operation, between thirty six and forty eight hours before the appearance of the areola. If the disease be perfect, a pustule will arise at the point of the second insertion, but it will become accelerated in its course, so that about the second or third day from its coming forth, it will be surrounded with an areola, increasing and fading away, pari passu, with that of the first pustule. If, on the contrary, the first disease be not sufficient, the irruption from the second insertion will pursue its regular course as in other cases. This is now to be regarded as the primary disease, and the same method of re-vaccination is to be practised, with matter from its pustule,—and so on, until a perfect affection shall be induced. Others have proposed to re-vaccinate about twelve days after the operation. If this has been sufficient, the second vaccination will either not succeed at all, or give rise only to a spurious or an irregular pock. But the most *certain* test is inoculation with small-pox matter,—a test, from which we derive at once our reliance on the general protective power of the disease, and on its efficacy in the particular case.

A distinct, circular, radiated, punctulated, and not very large cicatrix is a pretty certain indication, that the vaccine affection was perfect. When the scar "is large, and bears the marks of having been formed by high local inflammation, and wants the distinctive character just mentioned," there is much reason to apprehend, that the system has not been secured against secondary variolous disease.

CHAPTER XXXV.

MODIFIED SMALL POX.

Sect. 1. *Varioloid Disease.*

The term, varioloid, is applied to certain forms of eruptive disease, resembling small pox in their general character, and supposed to originate from the variolous contagion. We find irregular forms of variola, described in the earlier writers, under the names of vesicular, pustular, spurious small pox; swine pox, sheep-pox, stone-pox, horn-pox, &c. They were developed both in persons who had been affected with the genuine disease, and in those who had never suffered from it, and were all referred to some irregular action of the small pox virus.

The introduction of inoculation first, and after it of vaccination, seems to have influenced these anomalous affections in no other way, than by increasing the frequency of their occurrence. Soon after the epoch of vaccination, spurious eruptions of this sort were more particularly observed. A few believed them to possess a specific character, and to arise from a peculiar contagion; a majority regarded them as chicken pox; whilst a third class deemed them nothing more, than the result of variolous contagion, acting upon systems *partially* protected by the vaccine disease. During the last fifteen years, varioloid distempers have been on the increase. In various countries, they have frequently within this period, prevailed in extensive epidemics,—affording, by the way, a strong presumptive proof of the gradual obliteration of the vaccine impression from the system.

As mentioned above, three opinions have been held with regard to the nature and origin of this disease, some identifying it with varicella, a few contending for its specific nature and peculiar origin, and others asserting it to be an imperfect result of the variolous influence. The last opinion is the one now generally adopted by the profession, and its correctness is sufficiently evinced by the two following proofs: 1. The varioloid disease is known to have arisen directly and exclusively from the contagion of variola; and inoculation with small pox virus has produced it in its full character, in persons who had been perfectly vaccinated. I, myself, have produced a well-marked varioloid eruption, by inoculating with variolous matter, an individual who had been satisfactorily vaccinated about ten years before: 2. The varioloid does sometimes produce genuine small pox in the unprotected. Two striking examples of this sort I have myself witnessed, and the testimony on this point is abundant and unequivocal. That the disease when acting upon the constitution of persons, who have never undergone the vaccine or variolous infection, does *generally* reproduce itself in its characteristic form, and not occasion true variola, detracts nothing from the weight of the argument just offered: for it can hardly be doubted, that in a majority of varioloid cases, the small pox contagion is so modified or meliorated, as to be incapable of giving rise to the genuine affection, except where the susceptibility to its influence is extremely acute.

The works of several recent writers abound in observations, illustrative of the variolous origin of this disease. Dr. Thompson, particularly has adduced conclusive evidence on this point; and to his work, as also to my own chapter on varicella, I would refer the reader, who may wish to satisfy himself more fully upon the subject.

It is evident from what has been said, that small pox, both casual and inoculated, and the vaccine disease, are the principal agents that modify the action of variolous contagion, in such a manner as to give rise to varioloid. Independent, however, of these causes, we must not forget, that certain idiosyncrasies or peculiar atmospheric conditions may exert a similar modifying influence. As the degree and manner, in which these different causes operate, are extremely various, it is obvious that the irregular or varioloid affections, resulting from their action combined with that of small pox virus, must be correspondingly diverse. We accordingly find the diversity so great, that no description can be given of them, that can have more than a general application. I confine myself at present to that form of varioloid disease, resulting from small pox virus, modified by previous vaccination.

In many instances, as has been already stated, the vaccine affection entirely destroys the susceptibility to variolous contagion. The system, in other cases, is but *partially* protected by its influence; or if the susceptibility be temporarily taken away, in the lapse of years, it is again gradually acquired by the constitution. The disease that results from the action of small pox virus upon a system, thus *partially* deprived of its variolous suceptibility, and which of late years has become so common, deviates more or less conspicuously from regular variola; and is in a great measure divested of the dangerous character of the latter affection.

Small pox occurring a second time does not so often assume the varioloid character, as when it supervenes after vaccination. But it must be confessed, that its occurrence after vaccination is more common than after casual variola. This may in part be ascribed to some imperfection or disturbance of the vaccine affection, by which its prophlactick powers are impaired or destroyed. Dr. Jenner believed, that in every case where small-pox happens after vaccination, it is owing to an imperfection of the vaccine vesicle, occasioned by one or more of the following circumstances: 1. pre-occupation of the skin by some chronic cutaneous affection; 2. the use of spurious vaccine matter; 3. incautiously depriving the vaccine vesicle of its lymph, or otherwise injuring it by external violence, so as to give rise to common phlegmonous inflammation. Nevertheless, there can be no doubt that modified small pox or a second variolous infection, resulting in a spurious form of the disease, may and often does occur after the most complete and satisfactory vaccination. It would seem from the observation of Dr. Gregory, that the aptitude to variolous infection after vaccination, prevails in an especial degree in some families. The same writer infers from facts which have come under his notice, that modified small pox after the vaccine disease is most apt to occur in persons between the ages of fifteen and twenty-one. My own observation though limited, fully sustains this inference: by far the greater number of varioloid cases I have yet seen, were in young persons of the age just mentioned. This accords with the opinion before noticed,—that the vaccine impression is gradually weakened or partially obliterated, during the constitutional changes that take place about puberty

The precursory symptoms of this affection are not generally severe. In a large majority of cases the eruptive fever is so mild and inconspicuous, as scarcely to attract attention. Sometimes however, its invasion is marked by as much intensity of febrile excitement, as happens in the severe forms of small pox. The succeeding eruption in these cases is not, as might be looked for, necessarily violent or extensive: but a small crop of little pustules, varying in number from one to twenty, may ensue, and dry up in the course of four or five days. The duration of this stage is no less irregular, terminating sometimes as early as the second day, and at others, not until the fifth day from its commencement. In all cases, whether of a mild or severe character, the eruptive fever completely subsides, so soon as the pustules appear; so that the patient no longer finds it necessary to keep his bed.

A transient uniform efflorescence precedes in many cases the eruption: a rash, resembling measles, is also not an unfrequent precursor. Sometimes the varioloid exantheme commences on the limbs; frequently it is developed at the same time on different parts of the body; but generally it makes its first appearance on the face. In the beginning, it almost invariably exhibits the form of small, firm elevated, red papulæ. These pursue different courses,—many of them drying off without undergoing any further change, while the remainder gradually assume the vesicular or pustular form. The vesicular transformation is completed in the course of the first day; occasionally, not until the second. The vesicles are small, acuminated, filled with a limpid, watery fluid, and in many instances encircled by a faint red areola, so as to resemble in a certain degree the vaccine pock. They usually burst about the third or fourth day, or wither away—without assuming a pustular character, the fluid in them becoming whey-like in appearance. "This variety," says Dr. Thomson, "in the mildness of the eruptive fever; the strictly vesicular character, short duration and mode of disappearance of the eruption, corresponded (in the epidemic he described) so exactly with the descriptions usually given of the mildest varieties of *chicken pox*, as not to have been distinguishable from that disease."

In many cases, the vesicles become filled with a puruloid fluid, present a slight central indentation, and, by the third or fourth day, are converted into thin dark scabs. These separate and fall off usually about the sixth or seventh day after the appearance of the eruption, but sometimes not until the tenth or even twelfth day. Occasionally the vesicles remain distended with a colorless lymph for four or five days, and then become pustular containing a pus-like fluid. They usually continue in this state longer, before desiccation and scabbing commences. In some cases the scales being detached, are replaced, particularly on the face, by elevations in the form of warts, which disappear but slowly and by successive desquamations. (Cazenene.)

The quantity of eruption varies in different instances, from a single one to so great a number, as to cover the whole surface of the body. From the description just given of the course of the disease, it is evident, that papulæ, vesicles, pustules, and scabs, are frequently to be seen intermingled upon the same individual. Where the eruption is successive during several days, as sometimes happens, this appearance is still more conspicuous.

The complaint not unfrequently assumes so nearly the aspect and character of distinct small pox, that it is difficult to decide for the first five or six days, whether it should be regarded as a modified or regular variolous affection. In cases too, where the varioloid eruption is extremely abundant, it is quite possible to mistake it sometimes for the confluent form of variola. Ver generally however, the smallness of the pustules, the whey-like appearance of their contents, and the early period at which desiccation and scabbing commence, will distinguish such cases from genuine small pox. Dr. Thompson observes, that the areola and its pustule sometimes exhibit a remarkable resemblance to the vesicle and areola of cow pox,—a resemblance that betrays the mixed variolous and vaccine character of the disease.

The duration of this complaint is from six to twelve days, and its termination almost always favorable. Varioloid pustules very rarely leave any marks on the skin. When the scabs remain a long time they occasionally leave slight pits, but much more commonly, warts or fungoid elevations.

From the foregoing account, we perceive how extremely diverse are both the local and general phenomena of this affection. In one case it presents the characteristics of varicella, in another, it can hardly be distinguished from small pox, and in a third it bears a striking resemblance to the vaccine pustule. It differs chiefly from genuine small pox, in its general mildness, its strong tendency to a favorable termination, and in the briefness and irregularity of its course.

Diagnosis.—The following circumstances may be stated, as its common and characteristic features:

1. The eruption comes forth in successive clusters, at uncertain periods between the second and fifth day.
2. The eruption rarely, if ever, enters into complete suppuration, as happens in small pox.
3. The eruption is unaccompanied by fever, except in very violent cases.
4. Desiccation or scabbing invariably occurs much earlier than in regular variola. It commences generally on the fifth or sixth day, and the scabs usually separate by the eighth or ninth day, leaving red disks or tuberculous elevations instead of depression.

Treatment.—In the milder cases of varioloid affections, little or no remedial treatment is necessary. In all instances, however, it will be proper to exhibit a mild purgative in the commencement of the disease, and throughout the febrile stage, the diet and drink ought to be simple, unirritating and cooling. When the irruptive fever is very high, the abstraction of a few ounces of blood will be beneficial. In general, however, the febrile reaction may be sufficiently restrained, by free ventilation, cool drinks, refrigerant diaphoretics, laxatives and rest. Where, in short, the disease is so severe as to demand any medical attention, the treatment is to be conducted on the same plan that is proper in simple small-pox.

Sec. 2. Varicella. Chicken-pox.

There is, perhaps, no subject in medicine, that has given rise to greater diversities of opinion, than the disease termed *Varicella.* From the first notice of its existence to the present time, there seems to have been no fixed, general sentiment, with regard to its origin or pathognomic symptoms. The earliest records of variola inform us of the occurrence of various exanthematous affections, coincident with the prevalence of small-pox, and analagous to it in character. These affections were at first generally believed to be mere varieties of spurious small-pox, and to derive their origin from variolous contagion. Rhazes, who wrote in the beginning of the tenth century, and has given us the first history of variola, speaks of certain spurious eruptions, of a varioloid character, whose occurrence in individuals afforded them no protection against epidemic small-pox. In the same uncertain style, we find several succeeding authors, describing such eruptions under the various names of *improper*, *bastard*, *lymphatic*, *crystalline pox*, &c. Viden Vidius, in the sixteenth century, thought himself justified in distinguishing them from small-pox, and he described them under the name of chrystalli. Subsequently, Sennertus noticed certain varieties of variola, eruptions of which instead of being pustular, were vesicular in character, and *dried off in the course of a few days.* Sheep-pox, horn-pox, and wind-pox, were also enumerated by him, and the two latter terms, he conjectured, designated the same affections as the *crystalli* or earlier writers. Riverius speaks of these varioloid affections as common in his time, and introduces a description by Ingnassius, of the variety denominated *crystalli*. The eruption was similar in size and figure to that of variola, but consisted of limpid vesicles filled with a watery fluid, and desiccating on the third day without danger. Sydenham, in his description of an epidemic small-pox, alludes to a spurious variety, unconnected with the genuine disease, and inefficient in securing the constitution from variolous contagion. In the latter part of the seventeenth century, the term *chicken-pox*, a name in general use out of the profession, was first introduced into medicine by Morton. It was used by him to designate what he regarded as the most benignant form of variola; for it was his opinion, as well as that of the profession generally who had preceded him, that varicella was a mere variety of small-pox. Some, however, even at this period, believed it to be a disease *sui generis*—but all concurred in the opinion, that its occurrence never conferred an immunity from small-pox. In 1767, Dr. Heberden published his memoir* upon chicken-pox, in which he asserted the specific character of varicella, its identity with swine-pox, and its origin from a peculiar contagion, altogether distinct from that of small-pox. Very soon after this we have from Dr. Sims, an account of a certain eruptive disorder, which he termed chicken-pox. The description of the eruption as witnessed by him, differs somewhat from the characteristics of the disease as laid down by Dr. Heberden; but they both agree in regarding variola and varicella as radically distinct affections. This soon became the general sentiment of the profession, and so continued till within the last eighteen years, during which its validity has been strongly disputed by several ingenious writers. MM. Berard and de Lowit,† from observations on a small-pox epidemic during its prevalence at Montpelier, came to the conclusion, that variola and varicella, though differing in their outward manifestations, could ultimately be traced to the same contagious principle. Dr. Thomson‡ particularly, an able investigator of this subject, has in our opinion adduced abundant and conclusive evidence to prove, that the various forms of chicken-pox, corresponding to the diverse descriptions of the older and more recent writers, may be correctly referred, for their source, to variolous contagion.

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* Transactions of the College of Physicians, vol. iv.

† Essai sur les Anomalies de la Variole et de la Varicella.

‡ An Account of the Varioloid Epidemic, &c. By John Thomson, M. D.

This view of the subject throws some light upon those multiform and perplexing exanthematous distempers, that usually precede or accompany epidemic small-pox. We see the same morbific principle, modified in its action by different susceptibilities and peculiar circumstances, giving rise to a vast variety of anomalous eruptions, diverse indeed in many particulars, but of sufficient similitude, on the whole, to point out their family alliance and origin.

The plan of this work renders it inexpedient to enter into a full review of the merits of this question: a brief notice may suffice.

In favor of the common origin of the two diseases, it is asserted, 1st. That variolous and varicellous epidemics never exist separately and independently; 2dly. that the two affections mutually give rise to each other; 3dly, that varicella seldom occurs in individuals, who have undergone neither the vaccine nor variolous complaint. In objection to these observations the principal arguments are the following:

1. Epidemic small-pox, it is asserted, often rages, without being attended by varicella, and varicella occasionally prevails without the concomitance of small-pox. This, I am inclined to believe, is an unfounded assertion. So far as my enquiries extend, every variolous epidemic, described with any particularity, has been preceded, accompanied, or immediately followed, by variola or varioloid affections, exhibiting the characteristic marks of varicella. Dr. Mohl,* it is true, asserts, that from the year 1809 to 1823, small-pox was entirely absent from Copenhagen, whilst cases of chicken-pox were met with every year. But the same author does not deny, that subsequently to this during the prevalence of a small-pox epidemic in that city, varicellous affections were constantly present. After all, allowing the objection to be true, it does not therefore follow that those affections are rad-

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* De varioloidibus et varicellis. Scripsit Nic Christianus Mohl, &c.

ically distinct. It is well known that, at different periods, small-pox assumes very dissimilar appearances. Some epidemics are mild, some severe, and others malignant to a great degree: sometimes the pustules become filled with a bloody matter, and at others they are crystalline. These differences, exhibited by variola at different periods, are scarcely less remarkable than those subsisting between it and varicella. These result, it is probable, from accidental peculiarities in the action of the variolous poison, or in the susceptibility of the human system, occasioned by unknown causes. It is not, therefore, an irrational supposition, that certain atmospheric conditions, or other circumstances as yet undiscovered, may so modify the human susceptibility, or variolous contagion, over large districts of country, that a spurious or varicellous affection may be the prevailing epidemic.

2. During the prevalence of a small-pox epidemic, it is exceedingly difficult to ascertain, whether it be true that varicella may give rise to variola, and this to varicella. Dr. Thompson, however, who had abundant opportunities for observation, in the varioloid epidemic that occurred in Edinburg, asserts, that the varicelloid cases, with the exception of one whose origin was not traced, all occurred in situations, where they could be referred to the agency of variolous contagion alone; and that where varicelloid cases occurred, small-pox afterwards appeared precisely at the period it ought to appear, on the supposition that varicella may give rise to small-pox. It is stated by Dr. Mohl, indeed, that he never saw chicken-pox occurring in families, where variola prevailed; but at the same time he adds, that in such circumstances, he observed twice or thrice the occurrence of an eruption resembling varicella. We all know the difficulty of drawing an accurate diagnosis in such cases, and we may reasonably conclude that the eruption was really variolous. In confirmation of Dr. Thompson's observation, Dr. Luders affirms, that variolous contagion does sometimes give rise to chicken-pox. One of the cases he mentions seems quite conclusive. The circumstances were of such a nature, that it was quite impossible to suppose the operation of any other contagion than that of small pox, and yet varicella was produced.

Unvaccinated persons, who have never had the small pox, are liable to attacks of varicella, a proof it is affirmed that this affection is not a mere form of modified small pox. In answer to this we may observe, that it is generally conceded that chicken pox is of far more frequent occurrence after variola or vaccina, than where neither of these has been undergone. Drs. Bryce and Abercrombie saw but three cases in which the vaccine disease or varicella took place in persons, who had not experienced either vaccine disease or variola. But admitting such an occurrence to be more frequent than correct observation warrants us to believe, it could have little influence upon the argument. The question is, not whether varicella be a form of small pox, modified by previous vaccination or variolation, but whether it be an *imperfect result* of variolous contagion. The vaccine disease and variola seem indeed to be more powerful agents in modifying the subsequent development of the variolous principle, than any other agents with which we are acquainted. But there can be no doubt, for reasons above mentioned, that other circumstances may in a manner we cannot now understand, exert the same kind of modifying influence upon the human system.

4. Again it is asserted that varicella is at present more prevalent than before the introduction of vaccination, although small pox was then of far more frequent occurrence. This only proves that there are now more systems insusceptible to the full action of the variolous contagion than formerly, and rather sustains the hypothesis of their identity.

5. The occurrence of small pox does not prevent or modify varicella. Of course it is not meant in this objection to affirm, that chicken pox happening now and then after small pox, would militate against the identity of the two diseases; else upon the same ground, the distinct character of secondary and primary variola might be established. The objection must mean, that the occurrence of small-pox *does not generally* prevent or modify the varicellous disease. Dr. Thompson, however, asserts, that out of one hundred and fifty-five persons, whom he saw pass through the small pox, not one was afterwards affected with the vesicular disease." This is the more conclusive, because "upon the supposition of a varicellous and variolous epidemic,

most, if not all of this number have been exposed to the influence of both contagions." By the way we may remark, that if this mode of augmentation be advisable, we must conclude that vaccina and variola are identical in nature, seeing they usually prevent and modify each other.

6. The vaccine disease may be communicated to a patient soon after his recovery from varicella, and it will pursue its regular course; which never occurs after variola. Few experiments have been made upon this point; and we are as yet not justified in asserting, that the result of vaccination after the vesicular disease will be uniformly of the same character, as that stated in the objection. It is, besides, well known that small-pox in frequent instances fails to take away the constitutional susceptibility to the infection of cow pox. Many cases are recorded on the best authority, where the insertion of the vaccine virus, subsequent to an attack of small pox, has produced all the phenomena of perfect vaccina. But even admitting the objection were sustained by general observation, it could be met on the supposi tion, that the vesicular disease being an *imperfect* result of variolous contagion, was incapable of conferring upon the system the same insusceptibility to the vaccine disease, as the fully developed small pox.

7. Varicella, it is maintained, is not communicable by inoculation. This would seem to be erroneous. Mr. Bryce, it is true, alleges that he found it impossible to communicate chicken pox by inoculation, but Heim asserts that it is more communicable than small pox. Dr. Thompson also gives conclusive evidence on this point, and we have the authority of Dr. Heberden, for believing it can be inoculated. For confirmation of the identity of the two diseases, we may introduce here the statement of Reil,* that variola, occurring after varicella, is much milder than where this disease has not been experienced, more especially if the varicellous affection has been severe. So that the occurrence of varicella, would seem to shield the constitution in a partial degree from the virulence of variolous contagion.

8. Small pox and chicken pox are essentially different in their

* Erkentnntniss und cur der Ficher. bd. 5. s. 386.

characters and eruptions. This fact will have very little weight when it is considered, how difficult it is to indicate the precise nature of exanthematous affections by the character of their eruptions, and what confusion has existed in particular, with regard to the specific appearance of varicella, and its diagnosis from small pox or varioloid, even amongst those who believe in its distinct nature. In view of these circumstances, and of the abundant evidence derivable from other sources, favoring the identity of these diseases, a mere difference in their external characters can hardly be considered a valid objection, especially as we find no less striking dissimilarities in certain varieties of genuine small pox.

Upon the hypothesis advocated, there would seem to be little difficulty in explaining satisfactorily, the occurrence of modified small pox with all its numerous diversities, whether of a varioloid or varicelloid character. Vaccination or variolation, we are aware, does by no means in all cases obliterate the constitutional predisposition to be affected by the variolous contagion. Even after the system has passed through the most perfect form of small pox, a second attack will in some instances ensue; and we cannot for a moment doubt that the same event may take place after vaccination, since it is unreasonable to believe, that the vaccine disease can be a more certain prophylactick against variolous contagion, than small pox itself. But facts, illustrative of both these positions are too abundant and conclusive to permit any longer a doubt concerning their truth. Now between that state of the system, induced by vaccine or small pox, which confers entire immunity from variolous contagion, and that state in which the susceptibility to its influence, is totally undiminished, numerous degrees of susceptibility undoubtedly take place according to the individual idiosyncracy, temperament and accidental concomitant influence: and perhaps also the variolous poison may differ in the degree of its virulence and exert its agency under diverse modifications. If, then, after vaccina or variola, the predisposition to the latter disease is not *entirely*, but only partially destroyed, ought we not to look for an imperfectly developed form of the disease, should a second infection take place—especially too, as in this instance the variolous contagion may have been meliorated in its character? It is in this way, we believe, that varioloid affections occur in persons who have undergone the vaccine or variolous disease.

As to the occurrence of such affection in those who have never had either of these diseases, it may be observed, that the degrees of natural susceptibility in different individuals are correspondingly diverse. We see in the same family, into which this contagion is introduced, one individual affected so slightly as scarcely to require attention; another perhaps indisposed with only variolous fever, without any eruption; a third seized with a pretty severe attack of distinct small pox; and a fourth sinking under the most aggravated form of confluent variola. The presumption therefore is, that where small pox contagion acts upon a system naturally or accidentally insusceptible to the full influence of its powers, it will produce either an extremely mild variolous eruption, or an irregular modified one;—in other words, a varioloid or varicellous affection.

On a review of the whole argument, I am induced in common with many others, to regard varicella, together with varioloid, as spurious or modified small pox, or at least, as being referable for its ultimate source to genuine variolous contagion.

**The initial stage of Varicella.*—Varicella is generally ushered in by restlessness, thirst, loss of appetite, occasional pain in the epigastrium, increased heat of the surface and acceleration of the pulse. These symptoms may oocur in various grades of intensity; but, for the most part, they are by no means severe. In many cases the febrile excitement is scarcely observable; still it is occasionally almost as violent as in the severe varieties of small-pox, being attended with the same pain in the back, head and extremities as this latter affection. A severe cough and soreness of the throat are sometimes accompaniments of the initial fever, and during its continuance infants not unfrequently suffer from convulsions. This fever continues from one to three days, terminating generally on the appearance of the eruption, although in some instances prolonged two or three days after this period.

The eruption, which is vesicular in varicella, is often preceded, for a few hours, by a general erethematous rash, as in small-pox, and is generally accompanied by a vexatious tingling or itching in the skin. It appears first on the breast and back, next on the face and scalp, and lastly on the extremities. An incidental eruption of pustules is sometimes observable among the vesicles. The varicellous vesicles generally come out in succession during three or four days, so that at the same time, some will be just appearing, some perfectly matured, others shrivelling, and a fourth set converted into scabs. They are sometimes closely approximated, though seldom confluent.

Varieties of the eruption.—The dissimilar forms assumed by the vesicles, in different cases, has given rise to a division of the disease into three varieties.

1st. *Lenticular.*—The eruption in this variety appears very early. It is characterized by small, red elevations, rather oblong in shape, and having a flat shining surface, in the centre of which is a minute transparent vesicle. The vesicle at the end of the second day, is somewhat enlarged, being now 1-10th of an inch in diameter, and is filled with a whitish lymph. The fluid assumes a pale yellowish or straw color on the third day. On the fourth, the vesicle is shrivelled, desiccation commences, and in two days more it is transformed into a thin brown crust. The scab falls off about the ninth or tenth day, leaving a red spot but no depression on the skin. Owing to the successive appearance of the vesicles, this variety is prolonged for two or three days.

2d. *Conoidal.*—In this form the vesicles come forth suddenly, surrounded by a slightly inflamed border. On the first day, they are acuminated and filled with a bright limpid serum. They are more distended on the second day, containing a very pale yellowish fluid, and the surrounding inflammation is more extensive. On the third day, many are shrivelled, but others remain entire, attended with considerable inflammation, and containing a purulent matter. These vesicles generally leave permanent cicatrices. Scabbing commences on the fourth day, some of the scabs assuming a dark brown, others a rounded, yellowish and transparent aspect. " A fresh eruption of vesicles usually takes place on the second and third days; and as each set has a similar course, the whole duration of the eruptive stage in this species of varicella, is six days: the last-formed scabs, therefore, are not separated till the eleventh day.*"

Globate, or Swine-pox.—Swine-pox is characterized by large, *globose* vesicles, with irregular circular bases, and surrounded by an inflammatory areola. At first they contain a transparent fluid, which on the second day of the eruption becomes turbid, or assumes a whey-like appearance. On the succeeding day, they subside, or begin to shrivel, acquiring a yellowish hue, and some of them containing purulent matter. Small, thin, dark-colored scabs appear on the fourth day, and in the course of four or five days fall off, leaving small red marks, which soon disappear.

Diagnosis.—Believing, as we do, that varicella and varioloid originate from the same source, and in some instances approximate so nearly in character, as hardly to be distinguished apart, we can give but little credence to the assertion of some authors, that a diagnosis may be drawn, which shall be universally infallible. It may be well, however, to attend to the following diagnostic marks, which in the general will enable us to recognize varicella. 1. The eruptive fever is generally more severe in varioloid than in varicella: 2. In chicken-pox, the eruption is for the most part vesicular from the beginning; while in varioloid, it is always pustular, except in the vesicular form, where it is pustular for a day or more: 3. Tuberculous bases are not observable in varicellous vesicles, but in the varioloid eruption they are distinguishable from its commencement.

The varicellous pocks are, by some, believed never to present that central indentation, which frequently occurs in varioloid, but this is discredited by many accurate observers. Dr. Heim† has described a form of varicella, one of the characteristics of which is a slight depression in the centre of the pock. Berad de Hauit and other authors have mentioned the same appearance. If we may believe Dr. Luders, there is a difference in the seats of varicellous and varioloid eruptions—the former affecting the cel lular tissue between the skin and cuticle, and the latter being situate in the true skin.

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* Bateman: Practical Synopsis of Cutaneous Diseases.

† Die specielle Therapie nach den hinterlassenen Papieren des verstorbenen A. G. Richter: B. 2. p. 342.—1817.

Varicella prevails more frequently in the beginning of the year, or vernal months. Like small-pox, it seldom occurs more than once in the same individual. Secondary fever is of rare occurrence. The scabs, on falling off, not unfrequently leave depressions in the skin; but the cicatrices differ considerably from those occasioned by variola. Heim, who regarded these affections as essentially distinct, has adduced this circumstance among others in favor of his views. The pits of varicella, he says, are whiter than the rest of the skin, and quite smooth or even; whilst those, left by variolous pustules, have the color of the surrounding skin, and are uneven, like the surface of an orange. The margin of the varicellous pit is smooth and rounded; that of the variolous pit, generally somewhat indented and angulated. Hairs never grow in the disks of the former, in those of the latter they do.

Remediate Treatment.—Varicella rarely requires any medicinal application. General aperients, tepid drinks, and an antiphlogistic diet, are the principal remedies necessary.

[Whether varicella be a modified form of small-pox or not, has never yet been satisfactorily determined. Thompson has undoubtedly made the identity quite probable, and yet there are facts adverse to this view of the case. Be this as it may, I have noticed a manifest difference in varicella, when prevailing alone, uninfluenced by small-pox, and when it occurred with true variola in the immediate vicinity. In the one case, I found the mildest form of chicken-pox, almost invariably; while in the other, it was common to have pits and scars as real as in the milder cases of small-pox. This fact has a practical bearing, and teaches that the controlling agency of small-pox so affects the phenomena of varicella, as to call for a more vigorous treatment than can be proper for the simple variety.]

CHAPTER XXXVI.

RUBEOLA, MORBILLI,—MEASLES.

The term *rubeola* and *morbilli* are used as mere synonymia by the American, English and French practitioners; but the German writers universally employ them to designate two distinct diseases,—appropriating the latter term to the present affection, and the former to a different, though somewhat similar complaint (roethlen) described by Willan, under the name of roseola.

The contagiousness of measles has by some been denied. Among other circumstances, it is stated that the disease can never be traced from house to house, or from street to street, as may frequently be done in small pox and scarlatina; and that its first appearance is generally simultaneous in several individuals,—both of which facts are opposed to the notion of its being propagated by contagion. But this, together with every other argument of the kind is fully met by the well established truth, that the malady may be communicated by inoculation. Dr. Home succeeded in verifying this fact in a number of instances; and more recent experience has fully demonstrated the practicability of morbillious inoculation.*

The contagion of measles does not seem to be so active or powerful as that of small pox. During the greatest prevalence of the disease, many individuals entirely escape infection, although exposed to its full influence; and it is no infrequent thing to find in the same family, a few affected and the rest totally unaffected by the malady. It is difficult to say at what period of its progress, measles become infectious. Many believe it incapable of communicating itself, until the appearance of the eruption; but it would seem, from a few well attested cases on record,* that the disease may acquire an infectious power in a day or two before this event.

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*Vogel, Percival, Brown, Manro, and Tissot, recommended inoculation for measles; and Home and Horst practised it with success. Professor Sparanza, more lately, in an Epidemic that prevailed in the territory of Mantua, employed inoculation for measles with decided benefit. Six boys in the House of Industry, and afterwards he himself, were inoculated. A mild and regular morbillious affection was the result in all. Himself and others subsequently repeated the experiment with equal success. "A slight cut was made into one of the most vivid of the large blotches, with a lancet, the point of which was covered with the blood effused. With this, small incised punctures were made in the arm, and a proper bandage applied."—Edinburgh Med. and Surg. Journal, 1826. See also, Bibliotheca Italiana. Agosto, 1825.

Measles, like small-pox, rarely affect the same individual twice; and indeed a second attack of the former would seem to be less frequent than of the latter complaint.† After a careful observation of more than twenty years, Willan declares that he never met with a secondary attack of febrile rubeola, and I have myself witnessed but one unequivocal example of the kind. Home mentions a singular instance, in which enlargement of some of the lymphatic glands followed an attack of measles. About six months having elapsed, the glandular swelling subsided, and the patient became a second time affected with measles.‡

Measles rarely occur sporadically; but when they appear, as before mentioned, many individuals usually become affected with them at the same time. As in all other epidemic diseases, the general course and phenomena of this complaint are often strikingly modified; and systematic writers have therefore, divided it into several varieties, according to the regularity or irregularity of its symptoms, the nature of the attending fever, and the character and violence of the local affections with which it may be complicated.

According to the observations of some, *morbillious fever* may occur without any exanthematous affection.|| It certainly is not uncommon during the prevalence of epidemic measles, to meet

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* Edinburgh Med. and Sur. Journal, 1828.

† See Dr. Baillie's paper, in the transactions of a society for the improvement of Medical and Chirurgical Knowledge. Vol. iii.

‡ Medical Facts and Experiments. Richter, Specielle Therapie.

|| Morton mentions a morbillious fever unattended by any exantheme; and De Haen asserts that cases of this kind frequently occur during the prevalence of epidemic measles.

with fevers, attended with the usual catarrhal symptoms of the malady, but unmarked by its peculiar eruptions. Richter observes that persons affected by these fevers, are generally exempt from the disease during the subsequent progress of the epidemic.

Sometimes the measly exantheme takes place without any fever. The German writers* describe this modification of the disease under the name of *false measles*, corresponding to the *rubeola sine catarrho* of Willan, and the *rubeola sine* febre, of others. It is characterized by a regular measly rash, without fever, catarrh, or ophthalmia. It does not take away the susceptibility of the system to a subsequent invasion of febrile rubeola. "An interval of many months, even two years, has been observed between this variety and the subsequent febrile rubeola; but the latter more frequently takes place about three or four days after the non-febrile eruption."—(Bateman.)

Peculiar atmospheric constitution evidently exerts considerable influence over this disease; for at one period, its symptoms will be so light as scarcely to require medical attention; at another, it will assume a highly aggravated form; in a third period, it may take place under every grade of violence, from the lightest to the most malignant; and in a fourth, it "will hold a middle course, between the mildest and most dangerous forms of the malady." (Armstrong.) On the whole, however, the regular and moderate cases are infinitely more frequent than the violent and malignant ones.

Measles appear likewise to be decidedly influenced in their character by constitutional habit or idiosyncrasy. Hence it is that we sometimes meet with the disease under all its grades of intensity, in children of the same family—several very remarkable examples of which have come under my own observation. In general, measles are apt to be more regular and mild during the warm and equable, than the cold and variable seasons.

The time, intervening between the first impression of the rubeolous contagion and the actual commencement of the resulting disease, varies from a few days to two and even three weeks; but the period of incubation, generally, is from five to seven days. In nearly all the cases inoculated by Home, the eruptive fever commenced about the seventh day from the insertion of the virus.

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* Vogel, Standback, Bd. 3 p. 203, Metyger, wermischte Schriften, Bd. 2, p. 167.

Symptoms of the Eruptive Fever.—The initial symptoms of this complaint do not differ from those, which usually mark the invasion of catarrhal fever. Transient flushes of heat, alternating with faint creeping chills; slight redness and tenderness of the eyes, with an increased secretion of tears; cough and sneezing, with a watery discharge from the nostrils, are generally among the first symptoms of the morbillious fever. Sometimes two or three days of febrile excitement elapse, before the supervention of catarrhal symptoms; but in all cases, these symptoms occur sooner or later, in a very manifest form, and may be placed among the specific phenomena of the disease. The cough in the beginning is dry and harsh, attended with oppressive breathing, and some degree of soreness in the fauces. Not unfrequently, some of the lymphatic glands about the neck, and along the margins of the eyelids, become tumefied and tender. The stomach is apt to become quite irritable about the third day, and sometimes earlier, occasioning considerable nausea and vomiting; and where the febrile symptoms are highly aggravated, slight delirium may ensue in the evening of the same day. The fever is in general a marked synocha, as indicated by the hot and dry skin, and the quick, frequent and hard pulse.

The exantheme, generally, makes its appearance between the third and fifth days. This event, in cases of a violent character, is sometimes preceded for a few hours by more or less coma; and in small children, convulsions are by no means uncommon at this period. The eruption comes out first on the forehead, chin, nose and cheeks, and then on the neck, breast, body and extremities successively. It consists of small, red spots, apparently papular, and resembling flea-bites. They soon enlarge, and, as their number increases, run into each other, forming larger patches of an irregular or semi-lunar shape;* whilst the skin in the intermediate spaces retains its natural color. Some of the measles on the first day exhibit a small vesicle in the centre (Cazenane.)

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* Bateman.

The eruption on the face, during the second day after its appearance, becomes completely developed, and, on the following day begins to fade away; whilst on the rest of the body it continues vividly red. The exantheme, on the face, may be felt slightly elevated above the surface of the skin; but on other parts this elevation is not perceptible. Severe cases are attended with tumefaction of the face, in some instances so great as almost to close the eyelids. The eruption is not confined to the surface of the body: red patches appear on the gums, spread over the mucous membrane of the mouth, extend to the tonsils and uvula, and, acccording to Frank, are visible on the tongue. Leutaud saw the measly exantheme in the œsophagus and upon the mucous membrane of the trachea, and even on the surface of the abdominal and thoracic viscera.* The eruption fades away over the body in the same progressive manner in which it came out; so that by the eighth day from the commencement of the fever, it begins to disappear from the back of the hands, where it is wont to remain longest. On the succeeding day, the exantheme acquires a faint yellowish hue. Desquamation now commences on the face, and is completed over the whole body by the tenth or eleventh day.

The appearance of the eruption occasions no remission of the fever; but, on the contrary, is commonly attended with a manifest aggravation of both the febrile and catarrhal symptoms. The subsidence of the eruption is, generally, marked by an amendment of all the symptoms; and for the most part, the fever disappears entirely by the time the rash has desquamated. Occasionally, however, both the fever and cough continue, and even become worse after the complete disappearance of the measly exantheme. It is observed by Dr. Heberden, that in violent cases there is sometimes a recurrence of the coma, after the rash has gone off.

During the subsidence of the eruption, the supervention of more or less diarrhœa is by no means infrequent; and when not violent, it almost always meliorates the general and local symptoms. Occasionally a copious diarrhœa comes on just before the appearance of the rash. As it tends to interfere with the regular course of the exantheme, and to occasion a retrocession, it should be considered as an unfavorable occurrence.

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* Precis de Medec. p. 604.

The period, at which the eruption takes place, is various. It is generally stated to be the fourth day; and for the most part this is correct. Nevertheless, it is important not to lose sight of the fact, that even when the disease is perfectly regular in its character and course, the exantheme sometimes comes out much earlier, and occasionally, later than the period just named. It is observed by Dr. Armstrong, that the rash does not uniformly or generally appear, on the fourth day from the first development of the reaction. "I have seen," he says, "the eruption come out at all times, between the first and the seventh days; though perhaps, the most common period is between the third and fourth days after the reaction.

The aspect, under which this disease has just been described is that which it generally assumes. It appears, however, occasionally, under various striking modifications, requiring corresponding modifications in the treatment. Sometimes it pursues its career, unmarked by any serious complications; in a majority of instances, it manifests a considerable tendency to inflammation, particularly of the eyes and respiratory organs; and occasionally, reaction is sluggish and difficult. Hence, according to Dr. Armstrong, we have three varieties or modifications of the disease,—the *simple*, the *inflammatory*, and the *congestive*. To these we may add the *typhous* and *gastric* modifications,—the first being characterized by a typhous state of the system, and the last by prominent symptoms of gastro-intestinal irritation.

Synochal fever of a high grade is the characteristic of *inflammatory** measles. The pulse is hard, vigorous and accelerated; the skin dry and very hot; cephalalgia is severe, attended frequently with considerable delirium through the night; the eyes are very red; the cough is harsh, violent and distressing. with

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*Strictly speaking, every case of measles is inflammatory; but the general and local phlogistic phenomena often preponderate to such a degree, that such cases may with propriety be distinguished by the term *inflammatory*.

little or no expectoration, and the respiration oppressed and frequently painful. The exantheme for the most part appears early, and is usually of a vivid red. The diseases that are particularly apt to supervene in this variety, are cynanche trachealis, pleuritis, peripneumania with bloody expectoration, bronchitis, cerebral inflammation, and gastro-enteritis.

The malady in the *congestic* form is indicated by the ordinary symptoms of internal congestion. Reaction is tardy and imperfect, sometimes wholly deficient. The vital energies of the system are generally much depressed; there is pallor of the countenance; torpidity of the bowels; the pulse labors and is weak; the breathing slow and oppressed; the extremities are cold, and the features sunk and anxious. The eruption does not appear at all, or it comes out slowly on some parts of the body. If reaction be not induced, coma or stupor, and in some instances, convulsions ensue. Young children and persons of a relaxed, delicate habit of body, are peculiarly liable to this form of the complaint. Two cases of this kind were seen by Dr. Armstrong, in which the patients died comatose and convulsed. Autopic examination revealed in both cases great engorgement of the lungs.

The pecular symptoms of typhus fever, constitute the *typhus*, or as some have termed it, the *malignant* sort of measles. The pulse is generally weak and frequent, sometimes nearly natural; the skin possesses the true *calor mordax*, communicating a burning or acrid sensation to the hand, and on parts of it not occupied by the measly eruption, petechiæ appear. Colliguative hemorrhages, diarrhœa, and profuse sweats often occur, and the energies of the whole system seem to be sinking. It is a happy circumstance, that this variety of measles occurs so rarely, as it is always terribly malignant and fatal. Nevertheless it has occasionally prevailed as an epidemic. Sir William Watson has given us the history of a putrid morbillious epidemic; but it may be doubted whether the affection he describes, was really measles or scarlatina, as these diseases were believed by him to be essentially the same. Nevertheless, the portrait he gives of the complaint, answers more fully the peculiarities of rubeola than of scarlatina.*

*Watson.—Medical Observations and Inquiries. Vol. iv. p. 132

4. Gastro-intestinal irritation exerts a marked influence in some cases, giving rise to the *gastric modification* of measles. The attendant febrile symptoms are not very conspicuous, the pulse being small and feeble, though inordinately frequent. There is severe pain in the forehead; the tongue is brown; a sense of tension and fulness is often experienced in the epigastrium, or short cutting pains distress the bowels. Violent vomiting and purging sometimes occur before and immediately after the appearance of the rash, which is pale and often indistinct. The cough is short, tormenting, and almost incessant. In some instances, great difficulty of breathing and a sense of oppression in the chest will suddenly ensue, especially in young and irritable children. There is occasionally extreme restlessness, with much jactitation, dyspnœa and an anxious expression of countenance, particularly on assuming an erect attitude. (Dr. Armstrong.)

Sequelæ.—The tendency to irregular local determinations, observable throughout the whole course of measles, is more especially manifest during the periods of desquamation and convalescence. It is therefore a common remark that less is to be apprehended from the disease itself than from its sequelæ,—and the assertion is generally true, when made in reference to the ordinary or simple form of the complaint. Few, if any, diseases leave the system with so great a susceptibility to the hurtful in· influence of cold or atmospheric vicissitudes; and hence chiefly the frequent supervention of inflammatory and other after affections during convalescence.

The most common sequelæ of measles are, pneumonia, bronchitis, croup, otitis, arachnitis, chronic ophthalmia, and rheumatism. The development of tubercular action is not an infrequent result of the disease in phthisical habits; and it is especially apt to bring forth latent disorders of the lymphatic system, and occasion local manifestations of scrofula, where there is a strumous diathesis. Hence an attack of it is often followed by scrophulous ophthalmia and tumors about the neck, with other distempers of like character. Porriginous eruptions on the head, and serous ulcerations behind the ears, also frequently occur; and in some instances, induration of the mesenteric glands and marasmus. Among the occasional consequences, are herpes, boils on different parts of the body, discharges from the ears, and anasarcous swellings.

Diagnosis.—The diagnosis between rubeola and scarlatina is at times attended with much difficulty. Indeed until the time of Withering, in 1793, they were very generally undistinguished.* Nevertheless, the careful observer will always be able to draw a correct diagnosis between the two diseases, from the catarrhal symptoms accompanying measles, and the peculiarities of its eruption. The small vividly red spots, like fleabites; their union into irregular semilunar patches; and the natural color of the intermediate skin, distinguishes the rubeolous exantheme from the large, irregular, more uniform and raspberry colored efflorescence of scarlatina. In measles the rash is characterized by small red spots blending with each other, and displaying central points more vivid than the coalescing margin so as to give a maculated appearance to the skin. In the other affection the blush is more diffuse and uniform, and the eruption consists of innumerable minute red points united together, resembling much the redness of a *boiled lobster.* The difference in the general course and progress of the two affections is another diagnostic mark. The fourth day from the eruption of the fever, is the usual period of the manifestation of the measly rash. In scarlatina, the eruption generally comes out on the second, and not unfrequently on the first day. Lastly the catarrhal symptoms, so rarely absent in measles, can hardly fail to confirm the diagnosis.

Prognosis.—Measles, when uninterrupted in its regular progress and uncomplicated with internal inflammation, is not to be considered a dangerous malady. However violent in its simple character, provided it proceed regularly in its course, the hazard is generally but little. Percival calculated, that about one out of fifty cases of rubeola terminated fatally; and of this proportion one half took place in subjects under two years old. Rubeolous epidemics, of terrible fatality have indeed been recorded.* Obstinate internal congestion, preventing febrile reaction, are greatly to be apprehended. The sudden retrocession of the rash, either spontaneously or from violent purging, the application of cold or any other cause, is hazardous. It is an alarming incident, when internal inflammation, particularly of the lungs, brain or trachea, supervenes. Laborious respiration, with a wheezing sound in the trachea, indicates much danger in infants. Amongst the most fearful symptoms, are petechiæ, great muscular prostration and colliguative hemorrhages. The disease is attended with imminent risk, when it attacks females in the latter period of pregnancy, or in the puerperal state. In general, nervous, debilitated, and delicate subjects have more reason to fear danger than persons of robust and healthy constitutions.

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* Bateman says, that the publication of Dr. Withering's Essay on *Scarlet Fever*—or rather the second edition of that work, in 1793—may be considered perhaps as the date of the correct diagnosis of this disease. Synopsis, p. 66.

Treatment.—In relation to the treatment of this disease, Dr. Armstrong makes the following very important observation: "From an impartial consideration of the facts which have come before me, I am convinced that our plan of treating measles, (in its regular form) is too uniformly active when the eruptive fever is developed; and that we should be more fortunate in the main, if we interfered less with the operations of nature, in cases of a mild and regular character." The attention of the practitioner is particularlyly called to this remark. That it is true and highly important, I am thoroughly persuaded, both from my own experience, and my observation of the practice of others. An active and antiphlogistic treatment, where no internal local inflammations are present, is generally not only uncalled for, but decidedly injurious—even though considerable febrile excitement should mark the eruptive fever. The eruption in this, as in every other exanthematous affection, must be regarded as an effort of the system to relieve itself from the noxious influence of some internal irritation, by a critical or metastastic deposition on the surface. Whatever materially interferes with the regular course of the precursory fever, tends to disturb the regular appearance and character of the eruption: but the development of this is essential to the safe and complete resolution of the disease: therefore, when the eruptive fever is regular, not very violent, and uncomplicated by internal inflammation or congestion, we should abstain from severe measures, and employ a gentle remediate treatment. All that is usually requisite in such cases is to keep the bowels in a soluble condition by the employment of mild laxatives; to direct the patient to make a free use of tepid diluent drinks; and in instances attended by a very moderate degree of febrile excitement, to prescribe some of the gently stimulating diaphoretic ptisans—such as, infusions of sage, elder blossoms, marjoram, balm, or eupatorium. A high grade of fever undoubtedly indicates the propriety of moderate venesection; and in this case the refrigerand diaphoretics should by no means be neglected, as they often suffice, without bleeding, to procure a proper reduction of the general excitement. Small doses of antimonial wine, with sweet spirits of nitre, the saline effervescent draught, and the ordinary nitrous powder may be employed for this purpose. The subjoined formula* is particularly suitable, but I have generally preferred the following mixture.†

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* From the great fatality of these epidemics, the disease acquired its name *morbillus* or *little plague*. Were these epidemics measles? Both small pox and scarlatina were formerly confounded with measles.

When visceral inflammation, oppressive internal congestions or other irregular and alarming symptoms are associated with the disease, our remediate measures must be far more energetic.

After the initial stage of oppression, if no reaction should ensue and the face remain pale and sunken, the pulse feeble, and the breathing heavy, with great muscular prostration and torpidity of the sensorial powers, we must endeavor promptly and decisively to obviate the internal congestion, and arouse the action of the heart and arteries. If this be not effected, the eruption will not come out, and fatal stupor or coma will ensue. Dr. Armstrong, a strenuous advocate of venesection in the congestive form of fevers, recommends the moderate and exceedingly cautious abstraction of blood in congestive measles. Internal congestion however, appears to result from a previous loss of energy in the vital powers, and especially of the extreme vessels. It would therefore seem to be a more efficient and prudent method to impart warmth and vigor to the system, and to recall the circulation to the extreme vessels of the surface. Stimulating frictions to the skin with tincture of capsicum or flannels wrung out of hot brandy; sinapisms to the epigastrium; and bottles filled with hot water applied to different parts of the body and extremities, are the means best calculated to procure these ends. Measures of this kind expose the peculiar advantage of exciting the energies of the system without diminishing its resources, at the same time that they most efficiently tend to equalize the circulation and remove the congestion. In addition to the above means, we should not neglect the use of warm and gently stimulating drinks. In several instances of congestive measles I have employed camphor, suspended in a mucilaginous fluid with obvious benefit. The carbonate of ammonia, in my hands, has proved a very useful remedy in a few cases of this kind.*

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* ℞. Spirit mindereri, - - ℥vi
Spirit. nitri. dulc. - - ʒiiss
Vir. antimonii - - - ʒiss
Syrup lemonis - - - ℥ii
S. dose,—a teaspoonful or two every two hours.

† ℞. Muriatis ammoniæ - ʒiii
Pulv.Extract.Glycyrrhii ℥ss
Tart. Antimonii - - gr.i
Aq. fontanæ - - - ℥viii M.
Dose—a dessert spoonful every two hours for a child between two and five years of age.

The disease is not so much benefited, by the exhibition of either of these stimulants, where the congestive state precedes the exantheme, as when the rash, after appearing, suddenly recedes. In cases of this kind, oppressed respiration, a short, dry cough, a feeble and quick pulse, with an irregular distribution of the animal temperature—'some parts being cool or cold, while others

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* ℞. Carbonatis ammon. -	ʒii
Pulv. g. arab. - - -	℥iii
Sacch. albi. - - - -	℥ss
Aq. fontanæ - - - -	℥viii
Tinct. opii. - - - -	gtt. xl

M. Ft. S. A teaspoonful or two every hour or two.

are preternaturally warm—and a death-like paleness of countenance,' indicate extreme danger; and unless prompt relief be obtained, "the patient sinks rapidly under an apparent load of phlegm in the bronchia." (Armstrong.) *Camphor* here is an exceedingly valuble remedy. Armstrong recommends in strong terms, a large dose of calomel, combined with camphor, antimonial powder, and a few drops of laudanum. A combination of opium and camphor is the appropriate remedy in cases of retrocession, occasioned by inordinate purging or vomiting; and in conjunction with this remedy, the use of sinapisms, stimulating friction, blisters, the warm bath, or dry warmth to the surface, may be deemed indispensable. We should remember, however, that except in very feeble subjects, moderate diarrhœa is rather beneficial than injurious; and we should by all means refrain from interfering with it, particularly in robust and plethoric individuals,—unless indeed there be evident symptoms of its hurtful influence upon the regular appearance and course of the rash. (Armstrong.)

Inflammatory measles require energetic antiphlogistic and depletory measures. Whatever difference of sentiment there may be touching the employment of the lancet in the simple form of rubeola, no one disputes its efficacy, when the malady becomes complicated with visceral inflammation. Prompt and decisive venesection, both generally and locally; epispastics over the region of the affected part; gentle laxatives and nauseating doses of the antimonials, are the principal measures on which we should rely. *Antimonial* emetics, especially in young children, have frequently an excellent effect, where bronchitis or peripneumonia have supervened. Whatever organ, in short, may become the focus of irritation, our measures should be adapted to the existing inflammation, without any other reference to the morbillious affection, than to the grade and character of the attendant fever.

Certain varieties *of inflammatory* measles have occasionally occurred in which venesection is reported not only to have effected no good, but to have been absolutely detrimental. Thus the very fatal rubeolous epidemic, that prevailed at Paris in 1828, although nearly always complicated with inflammation of impor tant organs, particularly of the lungs, was mitigated in no degree by sanguineous evacuations.* Opium and calomel might be useful in cases of this sort. I speak doubtfully, as I have never had an opportunity of witnessing such violent examples of the disease. Nevertheless I am induced unhesitatingly to recommend the combination in this variety of measles, from the experience I have had of its excellent effect in pneumonia typhoides. Blisters, cupping and the warm bath may be regarded as indispensable in such cases.

In the remediate management of measles, vicissitudes of temperature must be especially guarded against. An *equable* temperature, and one neither productive of chilliness, nor much warmth, should be preserved. When the eruptive fever is very moderate, and the patient is of a feeble and irritable habit, the air of the sick chamber ought to be so regulated, as to communicate a sensation of warmth; and this is particularly requisite in congestive cases.

I have already adverted to the many disagreeable and dangerous sequelæ of measles and their frequent dependence on injudicious exposure to cold during convalescence. Common sense, therefore, dictates that the patient should during this period remain within doors, and avoid in every way the noxious influence of a cold and damp atmosphere. "Even in summer, convalescents should not be suffered to go out of doors except in the middle of fine days, and not without additional apparel." (Armstrong.)

Stimulating drinks of whatever kind should be positively inhibited, during the subsidence of the disease and the period of convalescence, and the diet must be light and unirritating.

There is occasionally dryness of the skin and a slightly febrile pulse after the appearance of the rash. Gentle diaphoretic febrifuges are the suitable remedies in these cases, and it will often be expedient to continue their exhibition during convalescence. An excellent diaphoretic of this kind is the spirits mindereri, in union with a small portion of sweet spirits of nitre and of antimonial wine. When pectoral symptoms continue troublesome at this stage of the complaint, the *muriate of ammonia* with vinegar of squills and antimony, is one of our most efficient remedies.*

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* See Biett's Report, in the Journal Hebdomadaire, No. XLII.

Tonics are almost invariably injurious in convalescence from measles. If the system is left in an exhausted but unirritated condition, a weak infusion of serpentaria may be given; and this with mild and nourishing diet, will soon restore health and vigor to the debilitated frame.

The following observation, by Dr. Armstrong, shall conclude what I have to say on this subject: "It is a remarkable fact, that when any cutaneous affections arise after measles, the internal organs generally remain free from disease; and even where some internal disorder has existed, I have not unfrequently seen it disappear, on the occurrence of some spontaneous eruption of the skin. Indeed there are many cases of this nature on record. At all times, we should, therefore, be most wary in meddling with vesicles, pustules, boils and the like, when they come out after the measles; for although they may be temporary blemishes on the surface, they are often the occasion of saving the vital works within.

[There is a prevailing disposition out of the profession, and to a certain extent within it, to do too much in the treatment of measles, and all the exanthemata. The worst feature, in this respect, is the devotion to what has been called the *heating* plan—the keeping of patients in apartments too hot, covering them with blankets, and drenching them with hot stimulating drinks. Such errors as these have killed scores of children, whose lives would probably have been prolonged, if the disease had been trusted wholly to nature. In all cases, save those in which the powers of life are rapidly waning, the *cool* treatment is decidedly more rational and safe.]

* ℞.	Muriat ammoni. - -	ʒiii	
	P. extract. glycyrrh. -	℥ss	
	Aq. fontanæ - - -	℥vii	
	Acid. Scillæ - - -	℥ss	
	Vin. Antimon. - - -	ʒi	M.

S. Dose—A tablespoonful every four hours for an adult.

CHAPTER XXXVII.

SCARLATINA. SCARLET FEVER.

Scarlatina is characterized by *fever*, a peculiar *exantheme*, and *inflammation in the fauces*—rapidly terminating, in some cases, in ulceration and sloughing.

General Observations.—Scarlet fever arises from a specific contagious miasma; but certain circumstances, it is possible, may concur in such a way as to generate the affection independently of contagion. "There is abundant evidence that fever attended with scarlet eruption, and possessing all the other characters of this disease, does occasionally arise from exposure to cold."(Gregory.) The period of the greatest activity of the contagious virus, is said to be the stage of desquamation. (Cazenane.) From three to five or six days usually intervene between its first impression, and the manifest development of the resulting disease.

As in small-pox and measles, one attack of scarlatina secures the system against a subsequent invasion. On this point there has been some diversity of opinion. Withering and Willan never witnessed a second attack of the disease, and they deny the possibility of its occurrence: Bateman, too, observes, "that this fact is now fully ascertained." On the other hand, Bicker,[*] Neuman,[†] Burns, and other authorities equally respectable, deny that the susceptibility of the system is invariably taken away by one attack; and they adduce some examples in confirmation of their opinion. It is also observed by Richter, that cases of a second, nay even a third attack of scarlatina have been noticed.[‡]

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[*] Beschreibung eines Scharlachfiebers.—Rotterdam, in 1778, and 1779, p. 162.

[†] Aufsatze and Beobachtungen fur Aerzte, p. 284, as quoted by Reid. Soc. cit. t. v 136.

[‡] Specielle Therapie, b. d. ii. p. 440.

The activity of the contagious principle may be influenced by various circumstances; such as constitutional idiosyncrasies, age, sex, climate, accidental predisposition, and peculiar atmospheric temperament. Certain individuals are entirely insusceptible to the contagion, never becoming affected with the disease, though fully exposed to its cause. Females, it is said, (Reid, Richter, Steiglitz,) are more susceptible than males; and it is the voice of general experience, that nurslings and old persons are much less liable to the disease than individuals of the intermediate ages. Some epidemics expend nearly all their violence on children; adults and adolescents are principally visited by others. Reid witnessed a malignant epidemic scarlatina, that was almost entirely confined to persons between the ages of fifteen and twenty five. The disease prevails at all seasons; but warm, humid weather, and the air of low marshy districts, would seem to promote its dissemination, and aggravate its violence. Certain peculiarities of atmospheric constitution, hitherto unrevealed, appear to exert considerable influence over the intensity of the contagion; as is manifest from the occasional prevalence of the disease in epidemics, and the different grades of severity and many varieties of character these have assumed. Great irregularity at times marks the progress of the epidemic. After raging extensively with much violence, it may suddenly abate so as almost to disappear, and then resume its power, and prevail with more malignity than ever. The contagion seems occasionally to linger for several years in a certain district, affecting from time to time only a few individuals.

Scarlatina may appear in so simple and gentle a character, as to require nothing but the mildest remediate management; or in a form so severe and malignant, that the promptest and most energetic measures will scarce mitigate its violence. Between these two extremes it occurs under every grade of severity. According to the differences of intensity and character, in relation to the fever, exantheme, and inflammation in the fauces, the disease has been divided into three varieties,—*s. simplex*, *s. sanguina*, *s*, *maligna*.

Symptoms of S. Simplex.—A period, varying from one to three or four days, usually intervenes between the manifestations of the ordinary premonitory symptoms of febrile diseases, and the commencement of the eruptive fever. At the end of this time, slight chills come on, alternating with transient flushes of heat. The patient complains of depression, nausea, pain in the loins, lower extremities and head; has a hot and dry skin, and a frequent quick pulse. Forty eight hours usually elapse from the commencement of the fever before the appearance of the eruption. This comes out, first on the face, then successively on the neck, trunk and extremities, and finally spreads over the surface of the mouth, fauces and nostrils: in some instances it is visible even on the albuginea. It consists of innumerable red points, which coalescing with each other, give a continuous and diffuse blush to the skin, not unlike the shell of a boiled lobster. (Armstrong.) In some cases, there is a uniform diffusion of the scarlet efflorescence over the whole body; in others, large irregular patches appear, leaving the intervening skin of the natural hue. There is commonly some enlargement of the miliary glands and papillæ of the skin, whereby the surface, particularly of the breast and extremities, acquires a slight roughness to the touch. On pressure with the point of a finger, the redness vanishes for a moment, leaving a transient spot of white.

Coincident with the irruption of the fever, or soon after, the voice becomes thick and less sonorous, and the patient experiences some difficulty in swallowing, together with slight soreness of the fauces. The edges and extremities of the tongue are usually red, while a thick white fur covers the rest of the surface, through which the scarlet points of the enlarged papillæ are visible. In most instances the face becomes somewhat swollen; the skin is hot, and the pulse frequent, quick, sometimes tense and vigorous. The thirst is not commonly troublesome, but the appetite is always impaired. The evening exacerbations are attended with considerable restlessness and occasionally slight delirium, both of which generally disappear on the approach of morning.

On the fourth day, the full developement of the fever and eruption is gradually accomplished, and their stage of declination commences on the day following. They continue to decline, *pari passu*, till almost the end of the seventh day, when there is an entire disappearance of both. When the eruption is about subsiding, the tenderness of the fauces abates; cutaneous transpiration is re-established; there is a copious reddish sediment in the urine, and diarrhœa often takes place. Desquamation commences on the eighth day. It is generally attended with considerable itching, and is followed by an unusual sensibility of the skin over the whole body. The appearance of the eruption is occasionally attended with a considerable abatement of the febrile symptoms. Sometimes the fever throughout the disease is so slight, as hardly to attract attention; at others so grave as to demand vigorous and decisive measures. It should be borne in mind, that, though the affection mav commence and continue for a day with great mildness, it may suddenly assume all the violent characteristics of the *anginose* variety.*

S. anginosa.—A higher grade of fever and a more severe anginose affection characterize this form of scarlatina. The forming stage is almost invariably attended with considerable headache, præcordial oppression, general muscular prostration, nausea and sometimes vomiting. A feeling of stiffness and dull pain in the muscles of the neck and under the ears and angles of the jaw, accompanies the fever from its commencement, and not infrequently precedes it. A red and slightly tumid appearance is presented by the fauces, palate, tonsils and uvula. The voice soon becomes hoarse, an unpleasant sense of constriction in the throat is felt in respiration, and deglutition is painful and difficult. There is a rapid development of febrile action, the pulse acquiring great quickness and frequency, but rarely possessing the vigor, tension and fulness, by which it is marked in the simple variety of the disease. The skin is more intensely hot than in any other febrile affection, and there generally is very great thirst. According to Currie and Willan, the heat of the surface has risen to 108 and even 112 degrees of Fahrenheit's thermometer. The tongue becomes dry, its edges are very florid, and on its surface are seen the projecting points of the inflamed papillæ. Considerable uneasiness or pain is felt in the head, and the whole course of the disease is marked by much languor, restlessness and prostration.

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* In reference to cases of this nature Dr. Armstrong has the following observations: "Simple excitement may readily produce inflammation, and in fact is the most frequent cause of it; for if there be a latent weakness in any organ, the simple excitement, if not timely moderated, is sure to give rise to inflammation there. It is on this account that many diseases merely marked by simple excitement at the beginning, are complicated with inflammation in their progress; and hence it is, that apparently benign seizures of scarlitina may eventually become the cause and concomitants of serious affections of some of the viscera. It is, indeed, only in subjects of the soundest constitution, that we ever see simple excitement uncombinedly exist throughout the disease: and the only reason it so frequently occasions inflammation is, that some tissue or other had been secretly in fault before its occurrence.—*On Measles, Scarlatina*, &c. p. 157.

In this variety, the eruption is not manifested so early as in simple scarlatina,—the third day of the fever being the common date of its appearance. It is scattered on different parts of the body, particularly about the elbows, in irregular, not very large patches, but is seldom diffused over the whole surface. Sometimes the rash disappears the day after it has come out, and "reappears partially at uncertain times, but without any corresponding changes in the general disorder; and the whole duration of the complaint is thus lengthened, and the desquamation is less regular." (Bateman.)

If the declension of the febrile symptoms takes place as early as the fourth or fifth day, the swelling and inflammation of the fauces generally pass off by resolution with the eruption and fever, without terminating in ulceration. But when, during the first three or four days the excitement is violent, or when it is protracted beyond the period just mentioned, small ulcers are formed about the tonsils and palate, which are rapidly converted into ash-colored, superficial sloughs, a considerable quantity of tenacious mucous is always secreted in the fauces, and concretes very frequently into white flakes, presenting the appearance of ulcers, where in reality there is none. The parts should therefore be carefully examined, before an opinion is expressed as to the existence of ulcers. (Armstrong.) With the subsidence of the fever, the sloughs in the throat separate, leaving red ulcerated surfaces, that usually cicatrize without difficulty. Occasionally, instead of separating about the eighth day, they enlarge, assume a brown color, and discharge an acrid sanious fluid. The glands about the neck, in such cases are hard, swollen and painful; and harassing diarrhœa and tenesmus supervene. The inflammation may extend into the trachea, and death ensue under symptoms of acute bronchitis.

This form of the disease is not seldom complicated with visceral inflammation. During the eruptive stage, the brain is often deeply involved, and symptoms of severe and fatal coma are exhibited. Abdominal inflammation may likewise take place. "At first there are only slight pain and soreness in some part of the abdomen, with a quickened pulse and hurried respiration; but the pain and soreness gradually increase, and at length are attended with vomiting, eructation, fulness of the belly, and general restlessness. In six, seven, or eight days, the abdominal soreness and pain abate or disappear, while the pulse grows rapid and feeble, the breathing more anxious, and the vomiting more urgent. Cold, clammy sweats and a universal collapse now speedily supervene, and are the immediate precursors of death." (Armstrong.)

S. Maligna.—In the beginning, this variety of the disease may wear the aspect of scarlatina anginosa, but it speedily betrays its violent and dangerous character. The eruption comes out at uncertain periods between the second and fourth days. It is usually pale at first, but in the progress of the affection, it acquires generally a dark or livid hue. Great irregularity marks its duration; and it will often vanish soon after its first appearance, and at the end of two or three days reappear on different parts of the body. The pulse, active in the commencement, becomes small and feeble in the course of the second day. The heat of the skin is variable, but in general not very intense. At an early period, delirium usually comes on; and, with occasional intermissions and exacerbations, often continues throughout the subsequent course of the disease. In nearly all cases, there is considerable disturbance of the sensorial functions; and in aggravated examples, the eyes become dull and inflamed, and a livid flush overspreads the cheeks. A brown and dark fur covers the dry tongue and the breath is fetid. In the fauces, on the soft palate and tonsils, may be seen grey-colored sloughs, which soon acquire a brown and finally a dark color. Sometimes, before the ulceration becomes severe or extreme, death will take place under symptoms of cerebral oppression. "In general," says Dr. Armstrong, "it is only when the fever is protracted beyond the fourth day, that the ulcers are converted into ill-conditioned, black and fetid sloughs." A large quantity of very viscid mucus is generally secreted into the fauces, occasioning difficult respiration and a rattling noise in the throat. When the sloughs are extensive and foul, a thin, acrid fluid issues from the nostrils and gives rise to painful irritation and excoriation of the parts over which it flows.

Where the disease has assumed a particularly violent character collapse supervenes towards the middle or end of the second week. Great prostration of all the vital energies now ensues; the pulse becomes very frequent and feeble; the heat of the surface sinks; the tongue is dark, brown, or black; exhausting diarrhœa often takes place; and, in some cases, hemorrhages from various parts and petechiæ occur towards the fatal termination of the complaint. The fever and affection of the fauces may frequently exist without an eruption at any period of the disorder. As early as the second or third day, death sometimes closes the scene; and it is observed by Bateman, that occasionally the symptoms continue to be moderate till an advanced period, when they suddenly assume a malignant and rapidly fatal character.

Three modifications of *malignant* scarlatina have been described by Dr. Armstrong,—the *inflammatory*, *congestive*, and *mixed:* the latter being characterized at once by much internal congestion and a moderate reaction of the heart and arteries.

The *inflammatory* modification corresponds with the *putrid* variety of Richter.* Its commencement is marked by a high grade of inflammatory excitement, as indicated by the full, hard, and vigorous pulse, the intensely hot skin, and early delirium. For a day or two, it differs little in appearance from scarlatina anginosa, but the early supervention of collapse or a typhous state, and of the gangrenous condition of the throat mentioned above, soon reveal its true character. The eruption comes out early; at first vividly red, but as the disease advances, it acquires a darker or purple hue. The animal powers speedily sink; a burning, acrid sensation is felt on touching the skin; the pulse becomes weak, small and hurried; the exantheme purplish, and petechiæ or a miliary eruption, coliquative diarrhœa and hæmorrhages ensue. The extreme violence of the anginose affection, and its decided early tendency to terminate in extensive gangrenous ulceration, are the principal characteristic phenomena of this modification. *Inflammatory* scarlatina maligna was formerly described under the name of putrid sore throat.

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* Specielle Therapie, bd. ii. p. 466.

The want of reaction distinguishes the *congestive* variety. The patient is pale, faint, oppressed, and complains of universal prostration, giddiness, deep-seated pain, and a sense of weight in the head, nausea, much anxiety and oppression in the præcordia.—"There is often a mixture of lividity and paleness in the face, and the eyes are usually dull, acquiring a fatuous or inebriated expression in the course of the disease. The mind at first alarmed and confused or dejected, soon becomes disordered with delirium; an indifference to surrounding objects and a stupor succeed, under which patients frequently expire." Respiration may be quick and short, or slow and impeded; and the pulse is weak, sluggish, and irregular. The tongue, at first covered with a white fur, becomes rough and brown in the course of the disease. There is torpor of the bowels in the beginning, but in the latter period of fatal cases, diarrhœa nearly always supervenes, attended, not unfrequently, with petechiæ, gangrenous spots, and wasting hæmorrhages from the nose, mouth and bowels. The rash, from its first appearance, is pale or copper-colored, acquiring at last a purple hue. This modification of the disease is seldom protracted in its course, but very often terminates as early as the second, third or fourth day. The anginose affection is seldom extreme, and is supposed by Dr. Armstrong to have little to do in bringing about a fatal termination. The mortal tendency of the disease he ascribes chiefly to the "venous congestions of the brain, liver, spleen, lungs, and of the vessels of the heart, giving rise to universal collapse and visceral disorganization," and perhaps to a change in the constitution of the blood itself.

Diagnosis. Measles and miliary fever are the only two disea ses with which this affection is liable to be confounded; and it must be confessed, that a correct diagnosis between them and the simple and anginose varieties of scarlatina is at times attended with very considerable difficulty. No single symptom can be regarded as peculiar to scarlatina. The eruption is at times wholly or nearly absent, diffused in blotches, and occasionally papular. Irregularity also marks the anginose affection, which may vary from a slight redness to much tumefaction, and occur with or without ulceration and sloughing. Nevertheless, an accurate diagnosis may nearly always be framed, by a contemplation of the following circumstances. In scarlatina, the usual time for the appearance of the eruption is during the first forty eight hours of the fever: the rash, in measles rarely comes out until the third day, and most commonly not until the fourth. The exantheme, in the former affection, consists of innumerable points, intermixed with small papulæ, dispersed over the cuticle,—resembling a diffuse erethematous blush. The rubeolous rash on the contrary, is made up of small circular dots, like flea-bites, of a more vivid red in the centre than circumference, so that their coalescence presents a less uniform blush than is displayed in scarlatina. These red and slightly elevated dots are generally congregated in clusters and patches, so as to exhibit an irregular *crescent shape.* "The crescent-like form of the patches of measles, and the more diffuse, and irregular shape of those of scarlatina, will be a material diagnostic guide." (Bateman.) In scarlatina, the eruption resembles in color the boiled lobster shell, and is generally of a lighter red than that of measles, which also is somewhat inclined to a brownish hue. The most striking diagnostic mark, however, is furnished by the catarrhal symptoms, so very conspicuous in nearly every case of measles, but either entirely absent, or extremely slight and partial in scarlatina. The inflamed eyes, copious weeping, red and tumefied edges of the eyelid, intolerance of light, coryza, sneezing, strong, harsh, and hoarse cough, so seldom absent in measles, and so rarely present in scarlet fever, will, in general obviate all danger of mistake. Finally, the ulceration and sloughing of the fauces in s. maligna and anginosa, are quite sufficient to distinguish this affection from rubeola.

Simple scarlatina, approaches very nearly, at times, to the character of miliary fever, so that a superficial observer, might very easily be led into error. They may be distinguished, by the miliary eruption being almost universally attended with considerable perspiration, which is not the case in the appearance of the scarlatina efflorescence. The little points composing the exantheme of the latter affection, rise out of a uniformly erethematous blush of the skin, whilst those of miliary fever appear to be seated on a skin preserving its natural color. Great præcordial anxiety generally attends the coming of the miliary eruption: and about the period of its subsidence, a second eruption similar to the first may appear, in some instances followed by a third crop of papulæ.

Prognosis.—As the disease may take place under diverse modifications and every grade of severity, from the mildest to the most malign, the prognosis must, of course be extremely various. It should in all cases be formed with a proper degree of caution, even where the disorder at first assumes the least alarming aspect; for the symptoms may be those of the simple and regular form alone during a few days, and then suddenly give place to others of the most violent and dangerous character: this is more especially apt to be the case when considerable severity characterizes the prevailing epidemic. Bearing this in mind, we may remark, that simple scarlatina is rarely attended with any hazard to the patient, unless dangerous secondary affections supervene during the subsidence of the disorder, or the period of convalescence, from cold or accidental causes. Peculiar danger is always connected with the anginose variety of the disease; and, in the malignant form, it is to be ranked among the most fatal of maladies. Generally, and perhaps justly, the hazard from scarlatina is estimated by the character and violence of the anginose affection. Dr. Armstrong seems to hold a contrary sentiment: at least, the affection of the throat by itself, he regards as but rarely the cause of death—a termination, he thinks, attributable rather to violent internal venous congestion and visceral disorganization, so common in the more violent grades of this disease. When the eruption is brightly red, and uniformly diffused over the whole or a greater part of the body, the prognosis is better than when it is pale or purple or brownish, and appears only here and there in large patches. (Armstrong, Reil.) Irregularity of the eruption is an unfavorable symptom,—as, for example, where it displays by turns a red, pale or brownish aspect; now appears chiefly on one part, then on another; vanishes for a time and again reappears; or at an early period suddenly vanishes altogether. It is remarked that a white streak, passing down along each side of the nose and encircling it below, is a fatal sign. (Reil.) A vivid redness and considerable tumefaction of the fauces, attended with pain or swelling, are better indications than a livid or dark red aspect of the inflamed part, without swelling and painful deglutition. White sloughs in the fauces are also more favorable than cineritious or brown ones. If on a sudden a strong inclination is felt to urinate, and a copious quantity of crude watery urine is voided, the danger may be considered great. (Richter.) The occurrence of gangrenous ulceration in the throat is of course always alarming.

The grade and character of the attendant fever, as might be expected, has an important bearing on the prognosis. A moderate degree of reaction is favorable; a typhus grade is the reverse; and extreme violence of fever in the commencement, with much angina, is a sufficient reason for apprehending early and hazardous collapse. Where febrile reaction is prevented or much impeded by great internal nervous congestion, there is every thing to fear; and a no less alarming event is the supervention of visceral inflammation. Collapse soon comes on in these cases; and if death does not speedily ensue, great prostration takes place, with the fatal symptoms of coma, constant delirium, and cold extremities: if to these be added petechiæ, wasting hemorrhages and involuntary discharges from the bowels, a hasty dissolution may with certainty be predicted.

Children except when suffering from painful dentition, are apt to be afflicted more lightly than adults with the disease. It is said to be most dangerous when it assails persons between the ages of fifteen and twenty-five.* Peculiar hazard likewise attends it, when it makes its appearance during pregnancy, and particularly in the puerperal state. In general, robust and healthy individuals suffer less from scarlatina, than subjects of a feeble, lymphatic and nervous temperament.

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* Reil. loc. cit. vol. V. p. 138.

A regular abatement of the heat and efflorescence of the skin, associated with diminished frequency in the pulse, and a lateritious deposit in the urine; a subsidence of the swelling, with separation of the sloughs, and healthy granulation of the ulcers; and lastly desquamation of the cuticle, are all indicative of a favorable termination to the disease.

Sequelæ.—Many troublesome and often dangerous disorders ensue on an attack of the scarlet fever. Of these *anasarca* is by far the most common, there being no other acute disease, that is so liable to be followed by dropsical effusions. This emphatically is true in reference to the anginose variety. Nine or ten days almost always elapse after the disappearance of the eruption, before the anasarca is perceived; and it continues commonly for the space of two or three weeks. It is observed by Bateman, that "when anasarca becomes pretty general, a sudden effusion occasionally takes place into the cavity of the chest, or into the ventricles of the brain, occasioning the death of the patient in a few hours." But, in general we have no reason to apprehend dangerous consequences from the dropsical effusion.

At times the disease has given rise to various nervous affections, such as hysteria, spasmodic asthma, chorea, epilepsy,[*] and neuralgic pains in the extremities; and occasionally it has been followed by strumous disorders, chronic cutaneous eruptions, herpes, gutta serena, and rheumatic pains. The malignant and anginose varieties are moreover sometimes succeeded by tonsillar abscesses, enlargement of the parotids, inflammation of the testicles, ophthalmia, deafness, otitis, inflammation of the mucous membrane of the bowels, excoriations about the nates, suppuration of the glands of the neck, chronic cough, bronchitis, or other slow suppurative inflammations, with hectic fever and its train of evils Dr. Armstrong and others have observed, that the hair is very apt to come out on the abatement of scarlatina, in which case it will never look or grow well again.

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[*] Kreysig. Abhandlung uber des schailackfieber, &c. p. 59. See also Cappel. abband von Scharlachsauschlage, p. 90. Reil. Fieberlebre. Bd. 5. p. 122.

The more complete and conspicuous the desquamation, the less liability is there to secondary disease during convalescence.

Treatment.—It is evident from the description we have given of scarlatina, that our treatment must be greatly varied, to adapt it properly to the many varieties and modifications the affection is wont to assume.

Simple scarlatina requires nothing but the mildest antiphlogistic management. One or two gentle aperients or œnemata should be administered; cool or tepid drink prescribed, such as barley water, lemonade or toast water acidulated with lemon juice or muriatic acid; and the patient be restricted to mild unirritating liquid diet. He should also be confined in a room, the temperature of which must be kept at a moderate and an equable degree. In addition to these measures, nothing more in general is necessary, than the use of slightly astringent and emollient gargles, such as sage tea, with a small portion of alum, and sweetened with honey; or an infusion of green tea.

Occasionally the forms of the disease will assume a severe aspect, and present symptoms of very considerable febrile irritation. More vigorous measures are now required, as it may be converted by a continuance of the high vascular excitement into scarlatina anginosa. Although the disease be manifestly simple in its form, if the febrile action be aggravated, it is prudent that we should endeavor promptly to restrain the phlogistic tendency, without interfering too much with the regular, and we may presume, necessary excitement of the heart and arteries. The "nimia diligentia medici" has doubtless been sometimes productive of much harm in simple scarlatina; but to the judicious practitioner, the grade of the existing symptoms will be a safe guide, in the employment of antiphlogistic measures.

It should moreover, be borne in mind, that from the aspect of the disease in its onset, we cannot always correctly predict its subsequent character—whether it shall be simple or complicated mild or dangerous. However benign therefore, the prevailing epidemic, whenever we are called to a case in the former stage marked by considerable lassitude and oppression, paleness of the face and skin, some headache and nausea, it is expedient to com mence the treatment, as if the complaint were about to assume an aggravated character. An emetic, promptly administered, will do much good by removing internal venous congestions and encouraging wholesome reaction. After its operation, it will be proper to exhibit a brisk mercurial purge. Where much affection of the head exists in the forming stage, Dr. Armstrong advises the use of the warm bath strongly impregnated with salt. "This practice," he remarks, "assisted by a brisk purgative, will in general give immediate relief, and contribute powerfully to moderate the subsequent reaction." When the succeeding febrile excitement is of a high grade, it should be reduced by purgatives, tepid effusions, cooling drinks, rest, ventilation, and some of the more gentle diaphoretics—such as spiritus mindereri, sweet spirits of nitre, or small doses of antimony and nitre.*

Far more vigorous measures are required in the *anginose* variety of the disease. Emetics in the beginning of this, as indeed in every other form of scarlatina, are justly regarded by the profession as among our most valuable curative means. The earlier their employment, the more beneficial in general will be their effects: in the forming stage particularly, or at the very onset of the malady, they are most decidedly efficacious.† Given thus early, they often meliorate the whole subsequent course of the disease; and, in some instances, interrupt, almost completely, the train of morbid action. Some have indeed recommended them at every period of the complaint; (Withering,) but almost all practitioners are agreed, that the forming stage is the only proper period for their exhibition. The good effects of an emetic, in the beginning of the disease, depends, probably, chiefly on the centrifugal direction which active vomiting communicates to the circulation, tending, thereby, to obviate internal congestions and secondary visceral inflammation; and, perhaps, also, in part on

* Armstrong. Treatise on Scarlatina, Ancerles, &c.

† Numerous authorities of great weight might be quoted in evidence of the good effects of emetics in this disease, They are recommended by Tissot, (Anis au-peuple,) Stoll; (Ratio medend. tom. ii. p. 248;) Withering; (account of scarlet fever and sore throat, as it appeared at Birmingham in 1773, and London in 1779, p. 300;) Steiglitz; (Versuch enier pruifung und verbersserung der yezt gewœhnlichen behandlimgs art des scharlachfieners, p. 231; Richter; (Specielle Therapie, Bd. ii., p. 480;) Reil; (Feberlehre, tom. v. p. 166;) Armstrong; (on scarlet fever, &c.;) Rush; (Medical Inquiries.)

the impairment or disturbance of the morbid sympathics, connected with the disease.

Formerly, there existed much prejudice against the employment of purgatives in this disease, but of late years they have been strongly recommended. Dr. Hamilton* particularly insists upon their efficacy in scarlatina, and the testimony of all modern writers is in accordance with his opinion. My own experience, though limited in this form of the affection, has led me to think very highly of the utility of moderate purgation. With the exception of an antimonial emetic in the beginning, I have, in a majority of cases, confided almost exclusively in the employment of aperients, with cooling applications to the surface, or an antiphlogistic regimen and the local applications, to be hereafter mentioned. No measure is better calculated to prevent the hazardous occurrence of coliquative diarrhœa in the latter period of the disease, than the proper administration of laxatives in the earlier stages. But as a general rule, strong purgation is by no means necessary or expedient. From three to four evacuations in the course of twenty-four hours are sufficient to procure all the advantages derivable from purgatives,† unless cerebral congestion exists, when active catharsis is obviously indicated.‡

The efficacy of antimonials, and the usual refrigerant diaphoretics, does not appear to be very decided in this affection. "In truth," says Dr. Bateman, "the temperature is too high to admit of a diaphoresis; and the only safe and effectual method of producing this effect, consists in reducing the heat of the surface by the application of external cold." Nevertheless, we have the authority of Richter in favor of the internal use of muriate of ammonia, when the fever is strong after the sufficient evacuation of the bowels.* It should be given in union with emetic tartar, according to the following formula:

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* Treatise on Purgatives.

† Bateman, Gregory, Richter, Reil, Willan. By Dr. Armstrong, active purges are preferred to mild ones in anginose scarlatina.

‡ Rhubarb and calomel; rhubarb and soda, in equal parts; calomel with small portions of antimonial powder; (Willan;) calomel, followed by a small dose of magnesia; small portions of the sulphate of soda or magnesia; an occasional dose of two or three grains of calomel, with the daily use of castor oil, or the administration of laxative enemata. may be used for this purpose.

℞. Muriat. ammoniæ, ... ℥ss.
Pulv. extract. glycyrrh. ℥i.
Tart. antimonii. . . . . . . gr. i.
Aq. fontanæ, ... ℥viii. M. ft. s.
A teaspoonful to be given every three or four hours.

Notwithstanding the use of the foregoing remedies, the inflammatory condition will sometimes increase, and the patient become anxious and very restless. Diluted sulphuric acid, in these cases, has been given by Steiglitz in large and frequent doses, with excellent effect. (Abhandl. feur Pract. Arzte. B. xxii. p. 307.)

The application of cold water to the surface cannot be too highly estimated in the higher grades of this affection. "We are possessed of no physical agent," says Bateman, "as far as my experience has taught me, (not excepting even the use of blood-letting in acute inflammation) by which the functions of the animal economy are controlled with so much certainty, safety and promptitude, as by the application of cold water to the skin, under the augmented heat of scarlatina and of some other fevers. This expedient combines in itself all the medicinal properties which are indicated in this state of disease, and which we should scarcely, *a priori*, expect it to possess; for it is not only the most effectual *febrifuge* (the 'febrifugium magnum,' as a reverend author, Dr. Hancoke, long ago called it,) but it is in fact the only sudorific or anodyne which will not disappoint the expectation of the practitioner under these circumstances. I have had the satisfaction, in numerous instances, of witnessing the immediate improvement of the symptoms, and the rapid change in the countenance of the patient, produced by washing the skin. Invariably, in the course of a few minutes, the pulse has been diminished in frequency, the thirst abated, the tongue has become moist, a general free perspiration has broken forth, the skin has become soft and cool, and the eyes have brightened; and these indications of relief have been speedily followed by a calm and refreshing sleep." The only precaution requisite in the application of cold water in this, as in every other febrile affection, is to ascertain that no sense of chilliness is present, and that the skin is dry and above the natural temperature. Pouring or affusion over the body is the best method of applying the water, where there is excessive vascular action with intense heat of the surface; but where either of these modes is impracticable, or opposed to the wishes of the patient and his friends, we must resort to washing or sponging the skin, every hour or two, until the temperature and circulation be moderated. Cold water simply, or vinegar and water may be used for this purpose. As the disease advances, Dr. Armstrong recommends that *tepid* affusions be substituted for cold; and, as a general rule, he thinks it prudent to commence with them after the third day of the stage of excitement. It is best, however, to be governed in this matter by the degree of cutaneous heat and arterial excitement present; for at any period of the disease, provided there be a hot and dry skin, cold water may be safely and beneficially employed.* (Dr. Stranger.) Purgatives and cold affusions may be employed conjointly. According to Armstrong, they are more efficacious in this way, particularly during the first three days of the stage of excitement, than when employed separately; and my own observation is in favor of this opinion. Within the period just named, blistering may also be beneficial. Where tonsillar inflammation and tumefaction exist to such a degree as to occasion painful deglutition, a blister to the throat will often afford considerable relief. Willan, Heberden, and Rush speak very highly of this practice.

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* Specielle Therapie, B. ii. p. 490.

The complication of the complaint with visceral inflammation, renders the employment of cold or tepid affusion almost, if not entirely useless; and it is observed by Armstrong, that where these means in conjunction with purgatives are unavailing, the practitioner may be sure of the existence of some latent inflammation. In a case of this nature, provided there be no signs of approaching collapse, recourse must be had to sinapisms, blisters, and small general or topical abstractions of blood. When much vascular irritation exists, or incipient phrenitis comse on—as indicated by the flushed and turgid countenance, intolerance of light, severe pulsating pain in the head, more or less delirium, and a disposition to somnolency—the patient must be laid in a cool situation with his head elevated, *and blood drawn according to the*

*Willan on Cutaneous Diseases. Note at p. 360.

state of the pulse.[*] In addition to this, an active purgative should be given, warm fomentations or sinapisms applied to the feet, cold water to the head, and cups to the temples, or blisters to the back of the neck. But in all our measures we should never lose sight of the imminent risk of *collapse*,—as this condition nearly always speedily ensues in this affection, upon the supervention of internal visceral inflammation, and when present, utterly forbids the use of sanguineous or other evacuations. Dr. Armstrong remarks, that "in such examples, the question is simply this—whether is greater danger to be apprehended from the inflammation or from the depletion?" Visceral inflammation, in his opinion, almost invariably terminates fatally, but depletion only occasions debility, and rarely is debility the cause of death. He believes it therefore right, even in the stage of collapse, to arrest, if possible, the inflammation, by depletion, wherever it may be seated. It is true, that debility may rarely be "the cause of death"; but that it favors the occurrence of this event can hardly be doubted. Why is visceral inflammation so fatal in these cases? The most rational answer is, *because it is associated with universal debility.* It is evident, therefore, that whatever augments this debility or prostration, must hasten a fatal termination. Depleting does indeed appear to us to be a desperate practice; and before adopting it, we would do well to recollect, that internal inflammation cannot be materially mitigated by a small bleeding, and that from a large one death must inevitably result. Herein is the reason why cases of this nature are so exceedingly perplexing; the most efficacious remedies for inflammation being sure to increase the prostration. When the inflammation is seated in the brain, we may apply fomentation to the feet, and dry cups to the temples or shaven scalp, at the same time that we exhibit active purgatives in conjunction with carbonate of ammonia or camphor. In other visceral phlegmasiæ attended with collapse, I should be disposed to resort to calomel and opium, with dry cupping and large fomenting cataplasms over the region of the affected part. Blisters in these cases are almost as hazardous as bleeding: they give rise to much general irritation, and gangrene often takes place in the blistered part.

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[*] Armstrong; Marcus, (Specielle Therapie, tom. iii. p. 272); Lorry, (Hist. de la Soc. Roy. de Med. t. ii.); P. Frank, (de Curand. Homin. Morbus); Rush; Burserius, (Institut. Med. Pract. vol. ii. p. 72); Heim, (Horn's Archiv. fur Medic. Erfahr. vol. iv. h. 1. p. 150.); Richter; and many other eminent authorities may be adduced in favor of prompt bloodletting in such cases.

Malignant scarlatina exchanges so speedily its highly phlogistic symptoms for those of a low and typhus state, that physicians were once in the habit of resorting immediately to the use of bark, wine and other stimulating and tonic remedies. "These remedies," says Dr. Armstrong, "so forcibly, so indiscriminately, and so fatally recommended by numerous authors, were once the means upon which, unfortunately, I relied for the cure of this modification of scarlet fever; and from repeated trials of them, I can truly affirm that they are the most pernicious in the first stage, and most destructive in the second." However quickly this variety of the disease may put on a malignant form, its irruption is often marked by highly inflammatory symptoms. The vehemence of the attack and the intensity of the excitement rapidly exhaust the vital energies; so that in proportion to the violence of this tumultuous, transient stage, will be the tendency of the complaint to assume a putrid character. Energetic measures are therefore imperiously required promptly to allay the initial febrile commotion. The remark I have already made in reference to the exhibition of emetics, followed by brisk purgation, in the commencement of the other forms of scarlatina, are equally applicable to this variety. If called sufficiently early, these should always be our first remedies. When, after their operation, the stage of excitement begins with violent symptoms—such as intense heat of the skin, a frequent, quick, and tense pulse, severe headach and delirium—prompt and efficient venesection should be practised. (Burserius, Lorry, Armstrong.) As the time allowed us for the prosecution of these vigorous measures is but short, it is highly important to draw blood at once, to the extent of producing a very decided impression on the system; or, according to Armstrong, until syncope approaches. One such bleeding, with the brisk operation of a purgative, will often so allay the violence of the disease, that its subsequent course shall be divested in a considerable degree of its dangerousness. But it should be borne in mind, that these active depletory remedies must be entirely restricted to the *early period* of the stage of excitement; for the approach of collapse renders bleeding utterly inadmissible.—(Armstrong.)

In every form of scarlatina, during the stage of excitement, *purgatives* may be employed with propriety. *Calomel* has been particularly recommended, both in the mild and malignant varieties;* and by Dr. Rush was administered throughout the whole course of the malady. A combination of calomel, precipitated sulphuret of antimony, and emetic tartar, according to the annexed formula,† is recommended in high terms by Seelig: it is said to be a gentle laxative, and an antiphlogistic alterative in the disease under consideration. In conjunction with purgatives, the warm-bath may be advantageously employed, particularly in cases attended with internal inflammation.

The collapsed stage of the inflammatory modification of scarlatina, is not apt to be extreme, where a prompt and vigorous antiphlogistic treatment has been pursued in the commencement of the disease. When it takes place after such a treatment, we may in general sufficiently sustain the system by the administration of wine whey, weak solutions of ammonia, infusion of serpentaria and by directing a milk diet, quietness and proper ventilation. (Armstrong.) But when from inefficient or improper measures in the beginning, or a peculiar malignancy of the disease, great and universal collapse ensues, (and such is the result but too frequently, both in the inflammatory and congestive modifications of malignant scarlet fever,) recourse must be had to more decisive stimulating and tonic treatment. The carbonate of ammonia in frequent and active doses; wine; camphor and opium where the brain is not particularly affected; infusions of serpentaria, with large doses of elixir vitriol; quinine and capsicum are the remedies on which we must rely. Peculiarly excellent effects appear to be derived from the use of *capsicum* as an excitant in this form of the affection. It was first employed with this view by Dr. Stephens, in a very fatal epidemic of scarlatina maligna, that prevailed at St. Christophers, (West Indies,) in 1787. Since then, many eminent practitioners have borne full testimony to its efficacy. The following is the manner in which it is prepared for use: Take a tablespoonful of small red pepper, a teaspoonful of common Cayenne pepper, and one teaspoonful of salt: beat them into a paste, and pour upon them half a pint of boiling water. This is to be strained, and about a gill of good vinegar added to it. Of this liquor, when cold, a teaspoonful is to be taken every half hour, and the throat should be frequently gargled with it. It is stated by Dr. Stephens that he employed this remedy in about four hundred cases, and with surprising success: the slough in the fauces was soon thrown off, and the ulcers began to heal; an agreeable sensation of warmth spread throughout the general system, and a more vigorous condition of the vital powers was superinduced.

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* "It is somewhat remarkable," says Armstrong, "that calomel, though given in large and frequent doses,, will hardly ever produce ptyalism in scarlatina." He states, that he has frequently given from six to eight grains of this article to children, twice, thrice, and even four times daily, without having, in a single instance, known it to produce salivation. It is considered by him the best purgative in every modification of this disease.

† ℞ Calomel, ... ℈ss.
Sulphuret. antimon. præcipit. gr. i.
Part. antimon. . . . . gr. ss. M. Divide into twenty equal parts.
Dose—one part to be taken by a child six years old, every third or fourth hour.

The *flowers of arnica* are favorably mentioned by Malfatte,* and by Steiglitz they were employed with much advantage in this stage of the complaint. Reil speaks in high terms of large doses of musk, especially where the patient is much harassed by restlessness and nervous irritation. We may also derive advantage from stimulating frictions with brandy, camphorated spirits, or tincture of capsicum. (Reil, Steiglitz.) The cooling drinks, acidulated with lemon juice, the sulphuric or muriatic acids, which should be freely allowed in the stage of excitement are well substituted during the subsequent stages by infusions of sage, balm or catnep, with sulphuric acid.

The treatment proper in the *congestive modification* of scarlatina maligna, does not require in this place an extended notice. As the curative principles in all congestive states of febrile diseases are alike, what has already been said in relation to the treatment of congestive measles, is applicable to the present malady when appearing under this modification. Our first efforts, if symptoms of oppressive internal venous congestion should mark the rise and progress of the complaint, must be to rouse the action of the sanguiferous system and recall the blood to the surface, thus relieving the overburthened internal organs. To accomplish this object, we should make an assiduous use of frictions and warm and stimulating applications to the skin; stimulating enemata; warm and gently stimulating ptisms; large doses of calomel, (5–10–15 grains), and small doses of camphor where there is much irritability of stomach. If these measures succeed in bringing about a moderate febrile reaction, we may properly commence at once with the use of the milder stimulating remedies—such as infusions of serpentaria or calamus, wine whey or carbonate of ammonia in small doses. But as the disease advances and collapse approaches, we must resort to the more active excitements already noticed, with a vigor correspondent to the degree of prostration present.

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* Hufeland's Journal, Bd. 12 at 120.

Local Treatment.—To diminish the tendency in the fauces to ulcerate, to arrest the progress of ulceration, to promote the separation of the sloughs, and dispose the ulcers to heal, are the objects to be effected by our local applications. Of these a great variety has been recommended. Fumigation with nitrous gas is highly spoken of by Willan; others advise the application of a weak solution of nitrate of silver; and some, of the sulphate of copper, to the sores. They are doubtless all beneficial at times. Various gargles have also been employed, and of these, the infusion of Cayenne, mentioned above, is perhaps the best. Dr. Jackson, of Northumberland, Pa. states that he has recently made use of ice and iced water with surprising success. He permits the patient to drink the coldest ice-water, and, enclosing a piece of ice in a gauze bag, he puts it far back into the mouth that it may be dissolved and swallowed. I have seen much good done by a strong infusion of the root of *baptisia tinctoria* (indigo plant); and the *black wash* (calomel, gr. xx. lime-water, ʒviii.) I have also found a very valuable article in several cases of putrid sore throat. An excellent gargle to wash away the acrid matter from the inflamed and ulcerated fauces, is *barley-water*, acidulated with sulphuric or muriatic acid. The same good effect may often be derived from a gentle emetic, provided neither collapse in the anginose variety, nor visceral inflammation be present. "Emetics," says Armstrong, "are the best gargles, where the throat is much obstructed from an accumulation of tenacious mucus; their operation effectually dislodges that morbid secretion for a time; often greatly relieves the respiration; improves the appearance of the ulcers; and they may be repeated where no abdominal inflammation exists, at any time, during the continuance of the fever whenever the respiration and deglutition become much impeded by an accumulation of phlegm."

Convalescence.—Convalescence from scarlatina is generally very tedious. During its continuance, light and nourishing diet should be directed, and the patient carefully guarded against cold and vicissitudes. Where much weakness and relaxation are complained of, it will be proper to prescribe the usual tonic and cordial remedies—such as weak infusion of serpentaria, colomba, gentian, or calamus aramaticus, with some of the mineral acids, particularly the sulphuric. These remedies are wholly inadmissible, where more or less irritation remains, which is sometimes the case during the early part of this period—as indicated by the quick and frequent pulse, pale and dry skin, anorexia, disturbed sleep, and inactive bowels. Here, we must resort to gentle aperients, diaphoretics and warm-bathing; and direct a simple, unirritating diet. Small doses of calomel in union with ipecacuanna, three or four times daily; the muriate of ammonia; digitalis with nitrate of potass; spiritus mindereri with minute portions of emetic tartar; infusion of eupatorium or elder blossoms; acidulated diluents, &c. will generally answer well in cases of this kind. As the susceptibility to the harmful influence of vicissitudes is always peculiarly great immediately after an attack of this disease, the patient should be extremely careful to avoid taking cold, remaining within doors during the whole period of convalescence, unless the weather be warm or mild.

The frequent occurrence of dropsy after every modification of scarlatina has been, generally, ascribed to injudicious treatment in the febrile stage of the disease, or to errors in diet, or imprudent exposure to cold during the period of desquamation and convalescence. This may be true, in part; but, from the occasional supervention of this sequela, after the most judicious management in all these respects, it would seem that a tendency to hydropic effusion is created by the orignal disease itself, by reason, perhaps of some irregularity in the development of its train of morbid actions,—in which case the dropsy or some other disorder may accrue as a complemental affection.* These dropical effusions are seldom attended with danger, and in general are easily removed. We may expect, in most examples of the sort, to find a manifestly phlogistic state of the system,—the pulse being quick, sharp, tense, frequent, and sometimes full; the skin dry, harsh, and above the natural temperature; urine small in quantity, high-colored and charged with coagulable serum; and the bowels usually torpid. Every thing indicates the propriety of an antiphlogistic treatment. Venesection is strenuously recommended by Richter and other eminent authors, some of whom are quite recent. In the epidemic scarlatina, described by Burserius, that prevailed at Florence in 1717, the affection readily yielded to the measures advised by Sydenham. About the twentieth day of convalescence, many became affected with cough, a sense of weight in the chest, and œdema of the face and forepart of the neck. Fever soon ensued; the dropsy became general; the breast was sore; the abdomen distended and painful; the urine very small in quantity, and in some instances entirely suppressed. All who took diuretics died. Dissection soon revealed inflammation of the lungs, intestines and kidneys.† Bloodletting was now freely practised, and with uniform success. Gregory does not appear to be decided as to the propriety of venesection. "I have met," says he, "with several cases which appeared to indicate bleeding and purging, but which resisted both, and ultimately yielded to bark and aromatic confection." Where there is an evidently phlogistic diathesis, my own experience is in favor of the measure, not indeed as a principal curative means, but as an important preparatory step to the use of diuretics, purgatives and diaphoretics.

Digitalis, alone or in combination with small portions of calomel and nitrate of potass, is the best diuretic in cases of this nature. In this, as well as every other variety of inflammatory dropsy, I have found the following a very useful prescription.* It possesses at once purgative and diuretic properties. Advantages may also be derived from small doses of tart. antimon. dissolved in a large quantity of some mucilaginous diluent. Calomel in large doses is recommended by Richter, who prescribes from five to ten grains daily to children. Throughout the treatment, quietude should be enjoined, and the patient restricted to the mildest farinaceous diet, with cooling acidulated drinks; and the occasional use of the tepid bath will often prove beneficial.

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* Reil, loc. cit. vol. v. p. 186.

† Burserius, Institutiones Med. Pract. vol. ii. p. 81.

But febrile irritation is not always associated with these hydropic effusions. They may be connected with a relaxed, torpid, and leucophlegmatic state of the system—constituting the *hydrops frigidus* of the German writers. (Reil.) "The principal remedy," according to Richter, "in cases of this kind, is calomel in doses sufficiently large to evacuate the bowels freely. Decided advantage may often be derived from the use of the cinchona bark, and the various medicinal preparations of iron—particularly the black sulphuret. As diuretics in this variety of dropsy, squill, spirits of turpentine,‡ and the tincture of cantharidies, have been highly recommended, (Hufeland, Buchholz.) The following mixture is said to have done much good in such cases.§

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*℞ Crem. tart. ℥ i.
P. sulphat. potassæ, ʒiii.
P. scillæ, ʒii.
Tart. antimon. gr. iss. M. s.

Give from four to six grains three or four times daily, to a child of five years old.

Kreisig is equally favorable to the use of calomel in this and other morbid consequences of scarlatina. "Against the sequela of scarlatina," he remarks, "the powers of calomel are great and cannot be too highly praised." *Abhandl. euber das Scharlachfieber*, &c. p. 107.

‡ ℞ Spirit terebinth. ʒi., tinct. opii, gtt. l. M. s. From ten to twenty drops to be given thrice daily to children from five to ten years old.

§ ℞ P. cinchon. ℥ss.
Aq. fement. ℥xii. coque andremand. ℥vi. dein adde
Rad. polygal. seneg. ʒii.
Fol. digitalis, ℈i. cola. dein. adde
Spirit. nitri dulc. ʒii.
Syrup cort. aurant. ℥ss. M. s.

Take from a tea to a tablespoonful every two hours, according to the age of the patient, *Prophylactic Measures.*—*Bella-donna*, regularly taken by persons exposed to the contagion of scarlatina, is supposed to protect the system effectually against the disease. Hahnemann, the author of the homæpathic doctrines, was the first who introduced to the profession the prophylactic powers of this narcotic, and since then many statements have been published in Germany and France in confirmation of the fact.* In conformity to his peculiar notion, it was prescribed by him in *infinitesimal doses.* He gives but forty drops, in seventy two hours, of a solution, of which one drop contains no more than the twenty millionth part of a grain of the extract! We may well be sceptical as to the efficacy of these doses; but that small doses of the article do really possess prophylactic virtues, is strongly testified by many respectable authorities. Berndt states, that he gave it with unequivocal advantage in this respect. It was found by Dr. Koreff of Berlin, to protect persons completely against the disease, when taken for eight or ten days before they were exposed to its contagion. Three grains of the extract are to be dissolved in an ounce of cinnamon water, two or three drops of which may be given to children under one year old, and one drop more for every year above this age.

It has been found that, seclusion of the sick, free ventilation frequent changes of linen, and other similar precautions, will prevent the spread of the disease even in the same family. Unlike other contagions, the contagious miasm of scarlatina appears to be incapable of attaching itself to clothes: but an intensely infectious power is said to reside in the breath of patients laboring under the malignant form of the disease,—as also in the matter discharged from the fauces.

[I regret that the space assigned for this note, forbids the notice of but two additional expedients. The first is the free use of ice and iced water, as suggested by Dr. Jackson (Northumberland) and others. The pulse at 140 fell to 100, under the salutary action of lumps of ice taken into the mouth, and spontaneously dissolved there. The other is the chlorine mixture, made of two drachms of chlorate of potash and two ounces of hydrochloric acid. Two drachms of this solution added to a pint of water furnish the article for use, of which one or two teaspoonsful may be given, six, eight, or ten times a day, or oftener. Both prescriptions are suited to the malignant form of the disease.

Touching the prophylactic powers of the extract of belladonna, I desire to be specific, because some physicians are disposed to sneer, as well as deny the statements long before the public. I am entirely satisfied, from experience and observation, that the belladonna has a preventive property. How it operates in this regard, I am not able to say, any more than to define its precise action under any circumstances. I have learned that it is vastly important to quiet fidgety mothers, touching this and other, so-called, contagious diseases This point gained, not a little is accomplished. It can do no harm to give the prescription to a nervous mother, and to assure her that the testimony in favour of its prophylactic power is very copious and respectable, and to urge her to administer it to all her children who are exposed to the disease. Her confidence in the statements and advice given, is at once a happy stimulus to her own mind, and a pledge that the prescription will be faithfully carried out. If her children escape, she is abundantly compensated for all her anxiety, and will care but little for the scepticism of the doctors.]

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* Ed. Med. and Surg. Journ., Jan. 1825.

CHAPTER XXXVIII.

PERTUSSIS—WHOOPING COUGH.

According to certain writers, whooping cough was brought into Europe from Africa, in the thirteenth century. It would seem, however, that the ancients were by no means unacquainted with this remarkable disease. Hippocrates, in the 6th book on epidemics, and also in the 6th section of his aphorisms, speaks of a cough, which, from the short description he gives of it, may be regarded, I believe, as the same affection that is now known under the name of whooping cough. The first distinct and comprehensive account we have of the disease, was furnished by Maezray, in the year 1414, in his chronological history of France. Since that period, numerous circumstantial records of its occurrence in epidemics have been published; and its nature and treatment have been discoursed upon, in not a few elaborate monographs.

Symptoms and progress of the disease.—The symptoms of common catarrh usually precede the invasion of whooping cough. In the beginning, lassitude, head-ache and sneezing, with hoarseness and occasional oppression of breathing, are experienced in a greater or less degree. Dreams and sudden starts disturb the sleep; there is impairment of the appetite; the bowels become sluggish; and a slightly febrile excitement is evident towards evening. During the first two or three weeks, the cough is almost invariably dry and ringing; and the paroxysms short and unattended by that peculiar convulsive clangor, termed whooping.

About the end of this period, the disease begins to manifest a more convulsive or spasmodic character, so far at least as the mere cough is concerned. The frequency and duration of the fits of coughing are increased, and when the malady is at its height, their violence is sometimes terrific. A sense of tickling in the larynx and præcordia, and a feeling of tightness in the breast are the usual precursors of a paroxysm. During its continuance, the inspirations are extremely difficult, slow and stridulous, attended with a sense of obstruction or spasmodic stricture of the glottis, rendering the cough distressingly suffocating, and in a manner convulsive. The face becomes turgid and purple from suffusion; the eye-balls are protruded and swollen; and the whole system violently agitated. So severe, in some instances, is the fit of coughing, that it induces a state of partial insensibility, and a dreadful feeling of impending suffocation. Occasionally, sanguineous determination to the head is so great, that blood bursts from the nostrils and mouth; and it is nothing uncommon for children to be attacked with convulsions, in consequence of cerebral compression, resulting from this cause. The discharge of a large quantity of viscid mucus, in this period of the disease, is the ordinary termination of a paroxysm; and the patient now frequently complains of some pain in the breast. In many cases, the cough continues until the accession of free vomiting, when it is immediately arrested, the patient greatly relieved, and a craving for fresh food experienced. The duration of the fits of coughing is very various: in some instances, being less than half a minute, in others, five or six minutes, and occasionally longer.

This stage of the complaint commonly lasts from four to six weeks, about which time it begins to abate. The declension is always very gradual, and from two to four weeks longer elapse, before the complete termination of the affection.

General Observations.—Fever is not essentially connected with whooping cough, although in many instances an accidental concomitant.

Children chiefly are liable to this disease, but adults are not always exempt. Two cases of it have I seen in subjects beyond the fiftieth year of age, and several in individuals, but a few years younger than this. The contagiousness of whooping cough has been denied by Stoll and a few others, but the profession concur generally in regarding it as highly contagious; and the fact is certainly unquestionable, although the range of its contagion may not be extensive. It is almost always epidemic in its appearance. I have never yet witnessed a sporadic case of this affection, but such instances may undoubtedly occur. The susceptibility of the system to its infection is taken away by one attack, so that it rarely, if ever, affects the same individual twice. As in the case of all other epidemical diseases, various grades of violence mark the different epidemics of this malady. Sometimes, it is so gentle, that numbers of those who are still susceptible to its influence, entirely escape, and its treatment can be conducted without difficulty; at others, it assumes a violent and dangerous character, is exceedingly intractable, and lays hold of almost every individual, whether old or young, who has not yet had the disease. It would seem as if some sort of a latent connexion subsisted between this malady and measles; for whooping cough frequently prevails most extensively, either immediately before the occurrence of epidemic measles, or in alternation with them, or directly after their disappearance.* Spring and autumn are most favorable to the prevalence of pertussis; and its invasions during the wet and changeable periods of these seasons, are attended with far more danger, by reason of the pneumonic predispositions and affections occasioned by atmospheric vicissitudes.

Prognosis.—When whooping cough assumes a periodic form, which, however, is an exceedingly rare occurrence, it will most likely be very intractable. A singular case of this kind is related by Dr. Percival, in which the paroxysm came on daily, at a certain hour, attended with tremor of the whole body, and terminating by a shriek rather than a whoop. The complaint was obstinate for several months, and returned at the same season for two years. It yielded to no medicine, and was supposed to depend on some morbid condition of the liver. (Good.)

A fatal termination of the disease is not to be apprehended, unless by the supervention of bronchitis, pneumonia, cynanche trachealis, hydrocephalus, apoplexy, or marasmus. These secondary affections are by no means uncommon, particularly in variable and humid seasons; the disease, therefore, upon the whole, should be regarded as one of considerable danger.

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* Richter's Specielle Therapie.

In northern or cold climates, far more violence marks the affection, than in the milder and more equable regions of the middle and southern latitudes. Rosenstein states, that in Sweden there were 43,393 deaths from this disease, between the years 1749 and 1764—and of these, 5,832 deaths occurred in the year 1755 alone. (Richter.)

In general, the danger is inversely as the age of the subject. In other words, the younger the patient, the more hazard of a fatal termination. It is observed by Cullen, that by far the greater number of those who die of this disease, are children under three years of age. Much is to be apprehended, when it attacks weak and delicate infants, within the first few months after birth; but even at this early age, robust and healthy infants generally pass through the disease without much difficulty or danger. The supervention of pneumonitis, during its continuance, is more common in adults than in children.

Its occurrence during pregnancy is to be feared, as not unfrequently it has occasioned abortion. Frequent hæmorrhage is an unfavorable symptom, protracting in almost every case the disease, and where it proceeds from the lungs, often occasioning the development of phthisis.

Whooping cough is exceedingly apt to excite the local manifestations of scrophula in children of a strumous diathesis. Thus, its attacks are often succeeded by scrophulous ophthalmia and glandular tumors in the neck. I know of no complaint whose occurrence is more to be dreaded, in subjects of an hereditary consumptive habit than whooping cough. It rarely fails to develop phthisis pulmonalis, in persons predisposed to the formation of tubercles, or in whom these exist in an incipient and dormant state.

Chronic bronchitis is not an unfrequent termination of the disease. This is particularly apt to occur, when the patient takes cold from exposure to a damp and variable atmosphere—a circumstance that always greatly aggravates the violence and danger of the affection. I have seen but few deaths from whooping cough, that were not attended with bronchitis, purulent expectoration and hectic symptoms, occasioned by having taken cold. In these cases, the matter expectorated, usually resembles, more than any thing else I know, a mixture of cream and mucus.

The cough, in some instances, after nearly disappearing, is renewed and protracted for several months by an accidental cold. Cases of this sort often continue for six or seven months. When the disease, either from cold or some other casual circumstance, thus assumes a chronic form, fatal hydrocephalus sometimes terminates its career—especially in patients, habitually subject to disordered bowels, or laboring under the irritation of difficult dentition.

Cynanche trachealis will often supervene during whooping cough. Children of robust and full habits, in the early stages of the affection, are more particularly liable to this accident. It is almost always the consequence of cold, and attended with the most imminent danger.

According to Richter, a profuse watery diarrhœa, supervening suddenly in this disease, in connexion with pneumonic irritation, is always to be regarded as one of the most dangerous occurrences. Death, he says, often follows such a discharge very speedily. The appearance of apthæ in the mouth and fauces, in the latter period of the disease, is inauspicious. Œdematous swellings of the feet and face, supervening in the commencement of the complaint, portend much danger, more especially when accompanied by a turbid, milky urine; but their occurrence towards its conclusion, which is by no means rare, needs seldom excite any apprehensions. (Richter.) A sudden cessation of the cough, it has been remarked, is an unfavorable event, and is frequently followed by pulmonary inflammation. In general, the more fever there is in this affection, the more violent and dangerous may it be considered.

Free vomiting, soluble bowels, plenteous expectoration, warm extremities and an open skin are regarded as favorable symptoms. According to Hufeland, the occurrence of some degree of strangury in the advanced stage of the complaint, is in general soon succeeded by a manifest mitigation of the symptoms.

It is said by certain writers, (Hufeland, l. c. p. 420: Lentin, Memorabilia, p. 36: Jahn Kinderkankn. p. 399,) that children laboring under some chronic cutaneous affection, as tinea, itch, &c., very rarely take this disease; and if they do become affected with it, they almost invariably pass through it in the lightest manner. This is contradicted by others, particularly by Hoffman and Haase.

The following are the principal affections that are properly called sequela of this complaint: strumous swellings, dropsy, epilepsy, opthalmia, rickets, general cachexy, aneurism, deafness, dementia, paralysis, and phthisis pulmonalis, ruptures and incurvations of the spine. A majority of these diseases I have known to ensue as consequences of whooping cough; and amongst them, epilepsy, struma, phthisis pulmonalis and ophthalmia appear of most frequent occurrence. When perfectly free from any adventitious complications, pertussis cannot be considered a disease of much danger, except in very young and feeble subjects. Still, in connexion with the grave sequela above mentioned, and many other consequences by no means uncommon, it assumes a very serious aspect, and is attended with no little hazard.

Cause.—The exclusive cause of whooping cough, so far as our knowledge extends, is a peculiar contagion, generated by the disease itself. That this, as well as every other contagious distemper must at one time or another have had a cause, independent of contagion, cannot, it is evident, be denied. But the nature of this cause, together with the period of its origin and the circumstances requisite to its generation, is involved in utter darkness. Nothing, in truth, is more incomprehensible, than the origin of maladies, now engendered and propagated by specific agents alone, which are elaborated by the living body, actually laboring under their influence. The only notion we can offer, (and it is indeed vague as the ancient dogma of fortuitous atoms,) is that, in the infinite combinations of which the material elements of the universe are capable, agents may have been evolved by a peculiar concurrence of circumstances, which had the power of creating these affections in the human system. This is the only plausible explanation that can be given, of the occasional rise of new diseases, which, when once originated, propagate themselves by elaborating their own specific causes;—

unless, indeed, we choose to refer them directly to the will of the Creator, as their immediate cause. But whatever may be our speculations in relation to this subject, whooping cough now is in all cases the product of a specific contagion. It is observed by Richter, that beside this principal cause, cold in conjunction with humidity may give birth to the affection. The grounds for this opinion are rather insufficient; and it seems to me just as improbable, as that small pox or measles should arise from accidental circumstances.

Linnæus, who at one time advocated the animalcular origin of almost all diseases, maintained that whooping cough was produced by inhaling, with the air of respiration, the minute eggs of a peculiar species of insect. Riverius, Dessault, Rosenstein and more recently Clesius concur in this opinion; but it seems to have met with but little countenance from the profession generally.

Whooping cough does not appear to possess a contagious character, until it has made considerable progress (Richter;) or until the second or convulsive stage has supervened. Its contagion, although very active, extends to no great distance beyond the body of the affected person. Accordingly separation of the healthy, from the infected portion of the community, will almost always prevent its influence.

Autopsic phenomena.—Various, and often contradictory, are the appearances discovered on post-mortem examination. This might naturally be expected, when it is considered, how diverse are the affections adventitious to this complaint, and at what different periods of the disease death takes place. We cannot, for example, anticipate the same post-mortem appearances in a case terminating fatally in consequence of pneumonia, as in one, where death results from apoplexy; nor is it reasonable to presume there should be much uniformity, where the immediate cause of death is so various, or dependent on so great a diversity of accidental disorders.

The respiratory organs being the parts most obviously implicated in whooping cough, pathologists have of course sought an explanation of the nature of the disease, especially in the autopsic phenomena they exhibit. Traces of inflammation in the mucous membrane of the bronchia and larynx, have been frequently discovered and particularly described. Strong, Cullen, Astruc, Lettson and Dany, mention these appearances as being by far the most common; and more recently striking examples of the same sort have been adduced by Whatt and Marcus. The former lost three of his own children by this disease, and in each, the marks of previous inflammation in the mucous membrane of the bronchia were very conspicuous throughout its whole extent. Marcus gives but two dissections in which bronchial inflammation was revealed. In one of these, a considerable quantity of pus was discovered in the air passages, the smaller branches of which were in a state of most intense inflammation, approaching in some parts to gangrene.

In some instances, no traces whatsoever of bronchitis have been discoverable; but the lungs have been found exceedingly congested, and the air-cells choked up with an extremely viscid mucus. Loboustein Loebel relates a case, in which a considerable portion of the diaphragm was covered with a number of small pustules containing a purulent fluid.* Various other appearances have at different times been observed, such as adhesions between the pleura pulmonalis and costalis, tubercles in diverse stages of development, enlargement and scrophulus degeneration of the bronchial glands, &c.

Sometimes the respiratory organs may be entirely unaffected in their structure, exhibiting not the minutest traces of any disease whatever; whilst the brain presents various striking marks of the previous existence of severe cerebral derangement. In a case related by Dr. Webster of London, the following appearances were observed on post-mortem examination; both hemispheres were extremely vascular, and the convolutions were so pressed together as almost to disappear. A good deal of serous effusion was visible under the piamater, particularly at the anterior and upper part of the brain, where a few spots of coagulable lymph were seen; and the membrane itself was injected with blood. The hemispheres slightly cohered anteriorly; the ventricles contained about two ounces of serum, and in the sheath of the medulla oblongata, nearly half an ounce of fluid was discovered.

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* Richter's Specielle Therapie.

After all, it is incontestible, that in many cases of death from whooping cough, no morbid appearances whatever have been detected on dissection; and there are many reasons for believing that the inflammation and other phenomena, so frequently observable on post-mortem examination, have no essential connexion with the disease, but are altogether adventitious or secondary.

Proximate cause.—Concerning the nature or proximate cause of this disease, there has been much diversity of sentiment. By Hoffman it was thought to depend upon an acrid serum in the lungs. Sydenham ascribed it to the influence of irritating effluvia, cast off from the blood into the lungs, in consequence of the insensible transpiration through the skin, being checked by cold and damp air. It was referred by Huxham to some morbid condition of the intestinal canal; to derangement of the liver by Butler, whilst others have considered it the result of gastric irritation, or with Stoll, of crude and bilious matters in the stomach.

The opinion, seemingly most prevalent at the present day, is that the disease essentially consists in bronchial inflammation. This inflammation is assumed to be specific in its nature, and capable of giving rise to the peculiar convulsive cough of pertussis; for it is well known that the train of symptoms characteristic of this disease are not induced by bronchitis. The doctrine would seem to receive support from the presence of febrile excitement in most instances of the affection, and from the appearances revealed by autopsic examinations of the mucous membrane of the bronchia and trachea. On a superficial view of the subject, the notion does certainly appears plausible; but objections insurmountable in my opinion, may be urged against its validity. In the first place, although fever is a frequent attendant on pertussis, many cases occur, in which not the slightest febrile movements are perceptible in its early stages; and not a few happen, where, during the whole course of the disease, febrile excitement is entirely absent. Again, that traces of inflammation are sometimes manifested on post-mortem examination, is not denied; but these appearances are by no means visible in all cases, which ought to be the fact, if the doctrine in question were true. Besides, it is no difficult matter to explain the frequent occurrence of inflammation, without having recourse to this hypothesis. Is it not natural to look for the supervention of bronchitis or other inflammatory affection of the respiratory organs, in a disease that so violently and frequently agitates the thoracic viscera, as does whooping cough? There can be no doubt too, that in many instances, where this cause fails in developing pulmonary inflammation, it may strongly predispose the lungs to the injurious influence of atmospheric vicissitudes, whereby pulmonary catarrh or bronchial irritation are at last superinduced. We therefore have good grounds for concluding, that the signs of phlogosis so frequently detected, on dissection, in the mucous membrane of the respiratory passages, are always adventitious, and by no means essential to the disease. It may be further observed, that bronchial inflammation is probably far from being so common, as autopsic appearances would lead one to think. Death, it must be recollected, takes place principally where unequivocal symptoms of inflammation are present; we may reasonably expect therefore, to find in these cases phlogistic appearances, although in milder instances no such inflammatory condition may exist. To conclude this part of the argument,—if bronchial inflammation be the proximate cause of the disease, it must, of necessity, be present in all cases; no less in the mild than the violent; a circumstance that is decidedly contradicted by almost universal observation. The only dissection I ever witnessed of a victim to this malady, presented no evidence of the existence of previous inflammation in the bronchia. The patient died suddenly of convulsions during a violent paroxysm of coughing.

That bronchitis is not the proximate cause of whooping cough, or essential thereto, is further evident from the fact, that the two diseases totally differ in their symptoms. Bronchial inflammation is rarely, if ever, attended with a violent cough, much less the peculiar cough, distinguishing pertussis. Moreover, rapidity of course, strong fever, and a continued sense of tightness and oppression in the breast, characterize bronchitis in its acute form. In the chronic form, the expectoration is invariably purulent, and entirely distinct in its character from the ropy and transparent mucus discharged in whooping cough. Almost invariably, too, the usual symptoms of hectic fever are present. Cough, dependent on acute inflammation of the respiratory passages, almost always begins to decline so soon as the secretion of the bronchial mucus becomes copious. In whooping cough, the reverse generally obtains. During the first few weeks of its course, there is seldom much mucus secreted in the bronchia, but so soon as the secretion becomes more abundant, which happens after the second or third week, the cough also acquires more violence, and assumes that convulsive character, which distinguishes it from other varieties of cough.

Very commonly, moreover, the slight symptoms of fever that accompany the development and first few weeks of the disease, vanish entirely in the second stage when the cough becomes more spasmodic and violent in its paroxysms. (Richter.) This circumstance most assuredly does not favor the idea, that the disease is of an inflammatory character; for if this were the case, we should expect the cough to decline with the fever, instead of which, it is always found to acquire much more violence.

It appears to me that whooping cough is essentially a spasmodic or nervous affection, the proximate cause of which consists probably in a peculiar irritation of the eighth pair of nerves—or pneumo-gastric.

Close attention to the phenomena, that immediately precede and accompany a paroxysm of the disease, has sufficiently convinced me of its nervous character. The sense of stricture in the breast and of the glottis, felt just before the fit of coughing—the suddenness and convulsive nature of the cough—the peculiar constrictive feeling in the præcordia—the stridulous respiration—all clearly indicate a spasmodic condition of the respiratory organs. That the irritation which calls forth the convulsive action of the diaphragm and the other parts immediately concerned in the act of coughing, is seated in the eighth pair of nerves, may, I believe, be inferred from the known agency these have, in the production of the various phenomena manifested by the pulmonary apparatus. Experiment, too, furnishes quite satisfactory evidence on this point. Professor Naase, in a series of experiments, instituted for the purpose of elucidating the pathology of cough, found that, on bruising or strongly pinching the par vagum so as to break down its structure, a violent convulsive cough was invariably excited. The same kind of injury inflicted on the *diaphragmatic* nerve, occasioned no such effect. This experiment proved, that the act of coughing is performed almost wholly by the sudden spasmodic contractions of the diaphragm. By opening the abdomen of various animals, and exposing the lower surface of this muscle, he saw distinctly its violent convulsive motions during the cough, which was excited by bruising with a pair of forceps the pneumo-gastric nerves. The peculiar tone of the cough and sense of constriction of the glottis, may arise from the extension of the irritation to the recurrent branches of the par vagus nerve. That this irritation is peculiar or specific in its character, may be inferred from the nature of its exciting cause.

Treatment.—It is generally believed that medicine can only alleviate the symptoms of whooping cough, without materially controlling its progress or shortening its regular course. This, I believe, to be an unfounded notion, the belief of which has largely contributed to render the treatment of the disease uncertain and inefficient. Sydenham, Werhoff, Hufeland, and several of the more recent German, Italian and French writers admit that its course may be arrested; but this, it is asserted, can never be done before the fourth week after its commencement. However this may be, my own experience has fully convinced me, of the possibility of abbreviating its progress; and, to sustain this opinion, not a few well-authenticated instances might be adduced from late publications.

The propriety of venesection in whooping cough has been frequently questioned. Where inflammation or general fever is present. all concur in advising its adoption; but in every other case it is by some deemed inadmissible, as the severity of spasmodic affection is frequently aggravated by the use of the lancet.

Now an unusual or preternatural momentum of the circulation may in many instances exist, without giving rise to strictly febrile symptoms; but it should not therefore be regarded as a harmless circumstance, even in diseases purely spasmodic. Let the essential nature of a complaint be what it may, if activity and fulness characterize the pulse, blood-letting cannot be improper, and its employment may be productive of much benefit. The abstraction of blood in the present disease, may be marked by no direct influence on its peculiar symptoms; but it will greatly tend to diminish the liability to the supervention of inflammation, and the danger attendant upon the violent cephalic congestion, induced during the paroxysm of coughing. Where bronchial or pneumonic inflammation is present, the lancet is of course indispensable. Bleeding in such cases should be prompt and decisive, both in a general and local way. Leeching here is particularly valuable. Tampering with the ordinary remedies now, would be to risk the life of the patient. It is the accidental inflammation, not the original disease, that must claim our attention; for great must be the danger and obstinacy of pulmonitis in an affection, which so frequently and violently agitates and irritates the respiratory organs.

The bowels in this, as in every other disorder, should be carefully attended to. The extensive and intimate sympathetic relations of the intestinal canal with the various organs of the body, cause it to participate more or less in whatever derangements may affect the human system. No matter what may be the nature of the malady or of its location, sooner or later the alimentary canal suffers functional derangement, giving rise either to a remora of its recrementitious contents, or of its vitiated secretions. These evils in their turn become sources of intestinal irritation, and it is needless to point out the strong tendency of such irritation to aggravate and continue diseases, whatever may be their primitive origin and character. There is almost invariably a morbid condition of the primæ viæ in whooping cough; the stools being sometimes bilious, at others, almost entirely mucous, and in many instances, dark and exceedingly offensive. These conditions should be rectified by appropriate purgatives, and a soluble state of the bowels preserved throughout the whole course of the complaint. Very active purgation, as it aggravates intestinal irritation, especially when frequently repeated, must by all means be avoided. A grain or two of calomel in the evening, followed by a small quantity of rhubarb, or other unirritating laxative in the morning, will generally answer our purpose. Small doses of sulphate of soda or magnesia are preferable, where much febrile excitement is present.

The utility of emetics in the treatment of pulmonary diseases, is fully acknowledged,—especially in affection of the respiratory organs marked by an abundant secretion of bronchial mucus. Much of the suffocative distress occasioned by whooping cough, arises from the lodgment of a large quantity of viscid mucus in the trachea and bronchia; and the removal of this obstacle to respiration is the principal object to be gained by the exhibition of emetics. A part of their beneficial influence may perhaps be attributed to the impression they make on the pneumo-gastric nerves in the stomach. They moreover induce a determination to the cutaneous surface, thus exerting a beneficial, derivative influence on the lungs; and also manifest a tendency to disturb the recurrence of the paroxysms. In the whooping cough of infants, they are especially called for; their strength is insufficient to expel the viscid mucus, which sometimes accumulates to such a degree as completely to clog the respiratory passages, when death takes place from suffocation. If, therefore, the cough in very young children is violent, and attended with symptoms of impending suffocation, an emetic should be quickly administered, or the fauces irritated with a feather, so as to bring on speedy vomiting. Sulphate of zinc, by the promptness of its operation, is especially suited to these cases; but I have in general preferred ipecacuanna to any other article of the kind. Dr. Fothergil speaks very highly of the following combination as an emetic in this affection:

℞. Pulv. chel. cancror.	ʒss.
Tart. antimon.	gr. ii.
Misce.	

According to the age of the patient, 1, 1½ or 2 grains of this may be given for a dose. The union of an absorbent with the emetic has been thought peculiarly beneficial in this complaint. Syrup of squills is another excellent emetic. I have often prescribed it advantageously, united with a small portion of antimonial wine. The antimonial wine, combined with an emulsion of assafœtida, may be used with considerable benefit as a palliative. Let it, however, never be forgotten, for the sake of the future health of our patient, that weakness and irritation of the stomach are frequent consequences of too long a persistance in the use of emetics, particularly those of the antimonial kind.

Some of our most valuable remedies for the treatment of whooping cough are found among narcotics. The *belladonna*, particularly, has been highly celebrated, and is without doubt by far, the best article of the kind we possess. Professor Borda was the first, I believe, who used it as a remedy in this affection, and his belief in its efficacy is almost unlimited. According to his declaration, in numerous instances every symptom of whooping cough was removed in ten or twelve days by its exhibition; and where it failed to eradicate entirely the complaint, it almost always mitigated in a marked degree its severity. Cases came under his notice, that appeared to be beyond the power of medicine, and yet were relieved by this remedy. Hufeland and Alibert are almost equally decided in their praise of the virtues of this article; and the testimony of many other writers, together with a large mass of evidence adducible from the current medical publications, might be added to establish still more firmly the fact of the efficacy of belladonna in this singular malady. My own experience leads me to testify confidently on this point. I have prescribed it within the last six years, in perhaps twenty cases, and in the majority of them with evident advantage. Since the publication of my work on the materia medica, my good opinion of its powers has been increased. In two cases, both of an exceedingly violent character, it arrested the disease almost entirely in the course of eight days. The principal circumstances that render its exhibition useless or improper, are fever and bronchial inflammation. In these instances, our chief dependance must of course be placed in bleeding general and local, and blisters or frictions with tartar emetic ointment on the chest. But in the purely spasmodic form of pertussis, when inflammatory action is absent, it is often singularly efficacious.

Dr. Butler speaks highly of the virtues of conium in this complaint, and it once possessed perhaps more celebrity than any other narcotic. It is said to delay the recurrence of the paroxysms and mitigate their violence, and was prescribed by Dr. Butler in every period of the disease, whether complicated or not with other affections. This gentleman states, that he has frequently used the following mixture with marked benefit:

℞ Extract. coni. gr. iii.
Magnes. Sulphat. ℈ i.
Aq. carui. . . ℥v.
Syrup rhad. . ℥i.
M. take 30 drops 3 times daily.

This article has, however, so frequently failed in general practice, that its virtues are not at present very highly estimated by the profession.

Lactuca virosa, hyoscyamus and opium have also been employed as palliatives in whooping cough. Opium has the recommendation of many eminent practitioners, but the general sentiment of the profession is opposed to its employment in this affection. It is objectionable both on account of its constipating effect and its tendency to determine the blood to the brain.

Ledum *palustre*, or marsh cistus, according to Linnæus, is extensively and successfully employed in Westrogotha, as a sedative in whooping cough. This praise of its virtues is supported by Wahlin and other European writers, but I am unable to say any thing concerning it from my own experience.

Antispasmodics are often used in this affection, and at times with temporary advantage. Musk has been frequently administered in every mode and in all proportions, but so uncertain and even contradictory are its effects, that little confidence is now reposed in its efficacy. Assafœtida will occasionally prove quite a valuable palliative, in cases unattended by fever or strong pulmonary irritation. It answers the two-fold purpose of an expectorant and antispasmodic. In a few instances, I have witnessed excellent effects from a mixture of the vinegar of squills and an emulsion of assafœtida.

The violence of the symptoms may sometimes be assuaged by the use of *expectorants.* The appended mixture, strongly recommended by Dr. Pearson, I have known to give considerable temporary relief.

Tonics have, in many instances, been found useful. Dr. Cullen strongly recommended the Peruvian bark as a very efficient remedy: "I consider," he says, "the use of this medicine as the most certain means of curing the disease in its second stage; and when there has been little fever present, and a sufficient quantity of the bark has been given, it has seldom failed of soon putting an end to the disease. The same remedy is in high repute almost universally among the German physicians, and there can be no doubt that it is frequently very efficacious; but it should not be forgotten, that its good effects are confined chiefly to the latter stages of the disease. In some instances the cough assumes a chronic character, continuing long after the usual period of its termination. These cases are frequently complicated with chronic bronchitis, and must be relieved by the most efficient measures; otherwise the constitution will be undermined, the system worn down, and the patient will die in a state of marasmus or under symptoms of phthisis pulmonalis. Strong doses of cinchona or quinine here, are often peculiarly serviceable. This tonic may also be very beneficial in cases of a purely spasmodic character, when the disease becomes protracted, and is kept up by habit.

Various other remedies have been employed in this affection, such as lobelia inflata, tincture of cantharides, rhus vernix, lead, arsenic, &c.

Of the *lobelia* I can speak from experience, and to its excellent powers in whooping cough I can testify most fully. I have prescribed it within the last five or six years in a very considerable number of cases, generally with some advantage, and in several instances, with the most decided success. It not only

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* ℞ Aq. fontanæ . . .	℥i.
Syrup	ʒiii.
Sub-carbonat. Soda	gr. xxv.
Vin. ipecac. . . .	ʒi.
Tinct. opii. . .	gr. vi.

M. The sixth part every four or five hours is the proper dose for a child between one and two years old.

mitigates the violence of the cough, but abbreviates, I believe, in many cases, the course of the disease. I have generally administered the saturated tincture in union with the syrup of squills in doses of ten drops of each, four or five times daily to a child two years old. I have given indeed as much as twenty drops of the tincture of lobelia, to several children about this age, and have always found it strongly palliative, when it excited sickness or slight vomiting.

Tincture of cantharides is well spoken of by certain writers,[*] when given to the extent of producing stranguary. Dr. Sutcliff asserts that it will sometimes, in a great measure remove the disease in four or five days. The same practice has the authority of Hufeland and Lettson in its favor. Sutcliff combined it with bark and the camphorated tincture of opium as in the subjoined formula.[†]

The *rhus vernix* stands upon the authority of many eminent foreign practitioners, and is stated to be a very useful remedy in whooping cough. Dr. Fresnoi asserts, that he has employed the extract of the leaves with decided success. He gave half a grain in half an ounce of syrup, to a child every three hours. According to his statement, the cough generally abated and in most instances, ceased altogether by the time eight or ten doses had been taken. Forty-two children, he adds, were cured at Vallenciennes in 1786, by this practice.

Lead was perhaps first introduced to notice as a remedy in whooping cough, by Dr. Forbes of Edinburgh, who used the liquor subacetatis, or Goulard's extract, and who speaks highly of its success. (Good.) It has obtained little credit in this respect with the profession.

Of the mineral tonics, *arsenic* has been most commended for its powers in this affection. Dr. Ferriar placed much dependence on this remedy in cases unattended with fever. His own experience induces him to state, that "arsenic is the only remedy which promises to shorten the disorder effectually." "I have," says he, "employed this article in several cases of infirmary patients with tolerable success; and I have occasionally given it in private practice with so much advantage, that I think it deserving of further trial." I formerly employed this remedy frequently; and in some instances its good effects were obvious. The proper dose for a child, between one and two years old, is two drops of Fowler's solution, twice or thrice daily. I have commonly given it in union with small doses of the extract of belladonna or conium. It should be remembered that, in all cases attended with febrile excitement or bronchial inflammation, its use is wholly inadmissible.

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[*] Armstrong, Chambers, Millar, Bucholtz, Lode, and others, speak much in favor of this remedy in whooping cough.

[†] ℞ Tinct. peruvian spirit ℥i.
Tinct. opii. camph. . ℥ii.
Tinct. cantharid. . ℈ii.
Two drachms of this mixture to be taken thrice daily.

Calomel, in minute quantities, would seem to possess some efficacy in whooping cough. Dr. Gregory states, that he has derived great advantage from small doses of this article, (a grain twice a day) with a few grains of scammony, in the latter stages of the affection, attended with symptoms of marasmus.

When the disease, at an advanced period, becomes complicated with chronic bronchitis, *balsam copaiva* may be employed with good effect. I have prescribed it, in a few examples of this kind, with the most evident advantage; and I am fully persuaded, that no other remedy promises so much as this one, in such cases.

The application of local revellents to the chest or along the course of the spine, has been in vogue a long time, and is justly regarded as an excellent remediate means in the treatment of whooping cough. It is particularly valuable in cases complicated with bronchial inflammation or hazardous sanguineous congestion in the head. Dr. Gregory advises the following embrocation to be used on the chest and along the whole chain of the spine.[*] Frictions with tartar emetic over the præcordial region, will, in many instances, be greatly serviceable. This practice originated with Autenrierth, and has been extensively adopted by the German physicians. Dr. Meyer, of Minden, speaks highly of sprinkling a small portion of morphia on the raw surface of a blister raised over the præcordia. He directs a small blister to be applied to this region, and the cuticle being detached, half a grain of morphia, rubbed up with starch, to be sprinkled on the exposed surface. The morphia is to be repeated every evening; and, if necessary, the blister may be applied every third day. Five cases, according to his statement, were so far relieved by this treatment in the course of eight days, as to require no further attention. When pneumonic affections complicate the disease, blisters and rubefacients, in conjunction with venesection and especially *leeching* on the breast, are indispensable.

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[*] ℞ Antim. tart. . . . . ℈ii.
Tinct cantharid. . ʒi.
Aq. rosar. . . . . . ℥ii. M.

The tartar emetic is to be dissolved in the rose water, and the tincture of cantharides then added to it.

Inhalations of various kinds have been used with considerable success in this disease. The fumes of tar are said to be productive of excellent effects, in cases unattended by inflammatory symptoms, and where a great accumulation of mucus in the bronchia exists, giving rise to extreme difficulty of breathing. Immediate and copious expectoration and relieved respiration are sometimes the direct effects. The nitrous acid vapour has also been particularly recommended, and I have myself employed it in a few cases with some benefit.

Change of air and exercise by gestation have generally an excellent influence in tedious and obstinate cases, attended with much exhaustion. In instances of this kind, a change of air, says Dr. Gregory, "is often the only thing that gives the patient a chance of life." I have seen one very remarkable recovery effected by removal to the country and the free use of milk diet. This measure is inadmissible in cases attended with bronchial inflammation, as it rarely fails to aggravate the symptoms immediately. Cold bathing, according to the experience of some, is a very certain and prompt remedial agent; especially where, from never having been used before, it introduces a new action into the system. A limestone soil would seem to exert a very beneficial influence in the cure of whooping cough. Dr. Ferriar says, that he has had "an opportunity of verifying this fact in some very striking instances."

The diet should be light and digestible; and it is particularly important to guard the patient against the influence of a cold, variable and damp atmosphere.

CHAPTER XXXIX.

CONVULSIVE AFFECTIONS OF INFANTS

At no period of life are convulsions so apt to occur as during the age of infancy. With a nervous system peculiarly excitable, infants are subject to so many sources of permanent and transient irritation, that a very large portion of them suffer more or less from convulsive affections; and these constitute an alarming proportion in the catalogue of fatal infantile maladies. According to the statement by the late Dr. Clark of Dublin. it appears that of 17,650 children born in the Dublin lying-in hospital, one sixth part died during the first year; and of those who died, nineteen out of twenty perished by convulsions. This proportion of mortality from convulsions, however, very greatly exceeds that which a similar estimate drawn from private practice would yield. Still the frequency and fatality of this affection, under its various forms, is by no means inconsiderable in every rank of society, and under every variety of climate, and external circumstances. Both the anatomical and physiological peculiarities of the infantile system, are indeed such as to account for the especial aptitude to convulsive maladies during this tender period of life. The mind and body of an infant, not yet inured to the impressions of internal and external causes, possess the most lively susceptibility to the various perturbating and exciting influences to which it is unceasingly subjected.

All children, however, are not equally disposed to convulsions. Mr. North observes that "the children of parents who marry at too early or too advanced an age, are more susceptible of convulsions than the progeny of those persons who marry in the prime of life." I have met with several, very striking instances of aptitude to convulsions in families which accord entirely with this observation. That the predisposition to convulsive affections is sometimes hereditary, appears to be highly probable. Boerhaave and Lorry, mention instances which strikingly illustrate this fact. We often meet with families, in which the occurrence of convulsions, is almost a matter of course in all the children as they successfully pass through the process of primary dentition; and on the other hand, in very many families, blessed with a numerous offspring such affections never occur, although the ordinary exciting causes, may be conspicuously present. It would appear also, that convulsions are much more common in cities, and particularly in the higher and more luxurious classes of society, than among those who "are regular in their mode of living and who enjoy the calm tranquillity of a country life." The fresh and pure air of the country, has an especial tendency to invigorate the infantile system, and to diminish nervous irritability, and thus to render the ordinary causes of convulsions less apt to excite such affections. It is, probably, mainly, from the want of pure and wholesome air in hospitals, that convulsive diseases are so much more common in these institutions than elsewhere. The children of mothers, endowed with a very susceptible, physical and moral constitution—with a quick and lively imagination, great sensitiveness, and mobility of temper, are in general peculiarly apt to suffer convulsive affections, during the period of dentition. Mauricean, Leuret, and others, assert, that children who have very large heads are more liable to convulsions, than those who are less liberally furnished in this way. This observation, however, appears to be wholly without any foundation, with regard to children who are healthy. "In ricketty children the size of the head is disproportionally large; and from the general symptoms of rachitis, it is evident that the head and spinal marrow are considerably affected; the brain increases rapidly in size, the senses are usually very acute, and convulsions are very frequent attendants of this distressing malady. It not unfrequently happens, when some children of the same parents are affected with rachitis, that others who are exempted from the disease are at a very early age destroyed by convulsions.* (North.)

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* Dict. des Sciences Medicales, tome xlvi. p. 602.

Whatever may be the source and nature of that condition of the organization which predisposes to convulsive affections, the following circumstances may be regarded as characteristic of "that state of increased irritability, from which their occurrence is to be anticipated. The child is more restless than usual and is apt to start at the most trifling noise. During sleep, he often starts up and cries out suddenly; or he remains restless and almost entirely without sleep throughout the greater part of the night. His natural temper undergoes a change. He becomes peevish, fretful, and discontented; "quarrels with his companions, and derives either no pleasure at all, or but a momentary amusement from his most favorite playthings, which he will suddenly thrust away, after they have for a moment occupied his attention." The pupils are very variable—being often extremely contracted for a moment, and then suddenly dilated to an unusual degree. "I have frequently," says Mr. North, "held a candle close to the eyes of a child when I have anticipated convulsions, in order to remark the effect produced. In some instances, where the pupils had been much contracted at the moment the light was applied, it has suddenly dilated, and as suddenly again contracted, although the light was steadily held close to the eye. The effect of light upon both pupils is not always similar. One may remain fully dilated, while the other contracts. I am inclined to believe from frequent observation, that when a light is applied close to the eyes, and the same effect is not produced upon both pupils, that we have much reason to fear some serious affection of the head." Children who are strongly disposed to convulsions, are apt when asleep, to lie "with their limbs almost rigidly extended, the great toes and thumbs being turned inwards." (Good.) The color and expression of the countenance, varies frequently. At one moment it is pale languid or anxious, and at another flushed and animated. Respiration is irregular, and frequently interrupted by long and deep inspirations, succeeded by "a short and catchy breathing." This disordered respiration, in connection with the preceding train of phenomena has been considered as peculiarly indicative of approaching convulsions. "If we observe the fingers of a child, highly disposed to convulsive diseases, we shall see them either in frequent and sudden motion, or firmly pressed towards the palm of the hand. The thumb is more frequently contracted upon the palm, the fingers at the same time being extended and separated from each other."

Every part possessing muscular fibres, is liable to become affected with spasmodic or convulsive contractions. The parts, however, which are most frequently the seat of convulsions, are the face, the superior and inferior extremities and the respiratory muscles. The countenance is always more or less distorted; and in some instances the convulsive attack is almost entirely confined to the muscles of the face. In some instances, the different parts of the body are separately and successively affected; in other cases, the whole system of voluntary muscles, are simultaneously thrown into convulsive agitation. "The most common form of convulsion" (says Dr. Clark) "is that in which there is a universal spasmodic contraction of all the voluntary, and many of the involuntary muscles, of the body, accompanied by foaming at the mouth, protrusion of the tongue, staring of the eyes, distortion of the eye-balls, laborious and obstructed respiration, sometimes accompanied with a violent redness of the face and scalp in the beginning of the paroxysm, followed by a purple color of the whole body at the end of it. This latter symptom sometimes continues until the child dies."

The redness of the face and scalp, and the foaming at the mouth mentioned by Dr. Clark, are, however, not very common in cases of simple convulsions. These symptoms are more particularly connected with epilepsy and convulsions depending on organic affections of the brain. It is a remarkable fact, that simple convulsions seldom occur at night, while the child is sleeping; and in this respect, they differ very materially, from epilepsy, which in a great many instances comes on only at night.

Causes.—It is asserted, by many writers, and doubtless very correctly, that the occurrence of convulsions among children is much more common at the present day, than at any former period. This has been ascribed to the increase of luxury and refinement, of late years, and particularly to the vicious system of educating infants so prevalent in modern times. Unquestionably nervous and convulsive diseases "have increased in proportion as polished education has removed children from bodily freedom, and carelessness of mind, which to a certain extent are so essentially necessary to the preservation of their health." Among the Indian tribes of this country, it is said that convulsions are scarcely known; and among the industrious and frugal inhabitants of the country, where children enjoy an abundance of healthful exercise, and a plain but wholesome diet, convulsive affections are very uncommon. The practice so much favored at the present time, of urging the tender minds of infants, to premature efforts in the acquisition of knowledge, is liable to very serious objections. That it must tend to weaken the general organization, and predispose to bodily infirmities, can hardly be doubted. "It may be a source of consolation to those parents, who are too apt to lament any apparent loss of time in the very early periods of life, to remember, that early acquirements, are not to be gained, without much risk of impairing health; and that the future progress and mental powers of the individual depend upon the foundation which is laid in infancy, by judiciously adapting the studies of the child to its age and constitution. By premature efforts to improve the mind, the brain and nervous system becomes over excited, exhausted and finally enfeebled. The practitioner, therefore, cannot too forcibly reprobate precocious studies. The injurious effects arising from the vanity of parents, who are ambitious of holding forth their children as specimens of extraordinary talents, are constantly presenting themselves to our view, in a train of nervous symptoms, and of susceptibility to ordinary impressions, which frequently lead to decided paroxysms of convulsions." (North.)

The exciting causes of convulsions are extremely various. In general, whatever is capable of causing strong sanguineous determinations to the brain, or of producing nervous irritation of the organ may give rise to an attack of convulsions. The vascular turgescence within the head, which in adults causes coma, or apoplexy, is apt, during infancy, to produce convulsions. Even a moderate degree of sanguineous engorgement of the brain is often sufficient to produce convulsions, in children, who are predisposed, by constitutional habit, or previous enervating causes, to the affection. This is often illustrated by the occurrence of strong convulsions in fevers of strong vascular reaction, and particularly in the cold and sometimes in the hot stage of intermittents. In infants the paroxysms of an ague are very often ushered in by convulsions. I have met with cases in which the convulsions came on regularly, at the same hour, for four or five days, before the nature of the malady was understood.

In some instances, however, convulsions are the immediate consequence of cerebral or nervous irrritation without any extraordinary sanguineous determination to the head; and these are, in general, the most serious and unmanageable cases. This cerebral irritation is usually purely sympathetic, depending on a primary local irritation seated either in the alimentary canal, or in some other part, more especially in the gums from dentition. It must be observed, nevertheless, that both intestinal irritation and dentition are very frequently attended with an increased determination of blood to the brain; and the latter, especially, is very rarely unaccompanied by this additional source of cerebral disturbance.

When an attack of convulsions is preceded and attended with a flushed and turgid countenance, dilated pupils, a full and active, or a contracted, frequent and tense pulse, with strong beating of the arteries of the neck and temples, and a warm and dry skin, we have conclusive evidence that the cerebral irritation which causes the convulsions is mainly, if not wholly, produced by vascular turgescence in the brain. In such cases, the child generally remains in a lethargic state, for a longer or shorter time after the subsidence of the convulsions. When, on the contrary, the countenance is pale and the pupils contracted, the skin cool or of the natural temperature, the pulse small, frequent, quick and irregular or feeble, we may infer that the attack is not dependent on sanguineous irritation of the brain, but the result of nervous irritation, transferred to the common sensorium, most probably from a primary nervous irritation located in the intestinal canal. There is no cause to which infantile convulsions, are more apt to be ascribed, than *worms*. That verminous irritation is capable of exciting convulsions, admits, indeed, of no doubt; but, I am persuaded, that the instances which depend upon this cause are, of comparatively rare occurrence; and this accords with the observations of many of the most experienced writers on this subject. "In common" says Mr. North, "with every other practitioner who has had opportunities of seeing much of the diseases of children, many worm cases have fallen under my notice; and I do not remember a single instance where convulsions appeared to depend upon the presence of worms in the intestines, or to be relieved by their being discharged." My own practice has furnished me with but few instances of convulsions, that could be fairly ascribed to verminous irritations.

Errors in diet, with regard, both to quantity and quality, are unquestionably by far the most common sources of convulsive affections, in infants; "So long as nurses and mothers believe that children thrive in proportion to the quantity they eat, so long will convulsive diseases be frequent and severe. Over distention of the stomach, with inappropriate articles of food is peculiarly apt to give rise to convulsions. I have known several fatal attacks of this affection, brought on by eating raisins, during convalescence from slight febrile complaints. Children whose digestive powers are feeble, or who are affected with a disordered state of the bowels, are peculiarly liable to convulsions, from the reception of substances of this kind into the stomach. During dentition, especially, the utmost care should be taken to prevent errors of this kind; for I am entirely convinced, that many of the cases that are usually ascribed to dental irritation, are the result rather of gastro-intestinal irritation from errors in diet or improper ingesta. An instance which I recently saw, brought the truth of this observation forcibly to my mind. The child had for several weeks been a good deal disturbed by painful dentition. While amusing itself with its play things it was suddenly seized with a violent paroxysm of convulsions. In a few minutes, it threw from its stomach a large quantity of fluid, containing a mixture of almonds, raisins and sponge cake. I administered an emetic and brought away no inconsiderable quantity of the same destructive mixture; after which the convulsions gradually subsided.

Repelled cutaneous eruptions and suddenly suppressed discharges from ulcers or sores, particularly about the head, or behind the ears, may give rise to convulsive affections. Mr. North doubts, "whether convulsions were ever produced either by the natural or artificial disappearance of cutaneous discharges or eruptions, provided, that a slight action was kept up, for some time upon the bowels, by the assistance of purgatives, and their effect was not allowed suddenly to subside." Undoubtedly, by such precautionary measures, the ill effects of drying up discharges or repelling eruptions, may generally be obviated; but my experience warrants me to say, that even this course of management will not always suffice to prevent the occurrence of convulsions. It must be observed, however, that children who are not under the influence of difficult dentition, seldom suffer any particular disturbance, from the desiccation of cutaneous discharges; but during the active progress of teething, attended with a general irritative condition of the system, it would most assuredly be extremely hazardous, to dry up serous discharges behind the ears, even though the bowels be regularly acted on by aperients. It does not appear, however, that the sudden drying up of scabby or suppurative eruptions, has any obvious tendency to excite convulsive affections. It is to sores discharging a serous fluid that these observations more especially apply. *General plethora*, with a predisposition to irregular sanguineous determinations to the brain, may, doubtless, contribute very materially to the occurrence of convulsions. It is, however, to be regarded, rather as a strongly predisposing or accessary, than an *exciting* cause of such affections; for it may be doubted whether mere plethora, ever produces simple convulsions, without the concurrence of some other cause capable of producing a preternatural determination of blood to the head, or causing cerebral irritation. *Dentition*, is incomparably the most frequent source of convulsive affections during infancy. In many instances, it is manifestly the sole cause of the convulsive paroxysm; but it frequently operates only as a strongly *predisposing* cause, in consequence of which, slight additional sources of irritation may bring on an attack of convulsions. Convulsions not unfrequently occur in the acute exanthematous affections, either just before the eruption is about making its appearance, or in consequence of the sudden repercussion of the exantheme, before the period of its regular declension. Convulsions may also be excited by a direct or mechanical injury of the brain. I have known several instances where a fall on the head so as to cause considerable concussion of the brain, almost immediately gave rise to general convulsions, without any permanent or fatal lesion of the brain. Even severe local injuries, of parts situated remote from the encephalon will sometimes excite an attack of convulsions. "Infants," says Mr. North, "are liable to convulsions, almost immediately after birth; and it cannot be doubted, that they occasionally arise from excessive and long-continued pressure of the head, during protracted labor." Convulsions depending on this cause, seldom continue longer than a minute or two.

In some cases, a slow and insidious inflammatory irritation will go on in the brain, or its meninges, with scarcely any decided symptoms of disease, until either an effusion of serum upon the surface, or into the ventricles of the brain or some other cerebral lesion is effected. In cases of this kind, a paroxysm of convulsions is sometimes the first unequivocal intimation of the child's indisposition; and what was previously considered as mere fretfulness and general irritability of temper, of no serious import, now suddenly assumes the character of an almost hopeless form of cerebral disease. Cases of this kind, however, are almost invariably connected with more or less paralysis, and frequently with strabismus, and must be regarded rather as insidious instances of hydrocephalus or of cerebral inflammation, than as convulsions of the ordinary form, of which I am now speaking.

Convulsions, may, moreover, be the result of *moral causes*. The emotion of fear or violent alarm, when suddenly excited, is capable of producing the most violent effects upon the irritable and sensitive frames of children. Mr. North, states that an instance occurred to him, in which a child of four years of age, "who had never previously been affected with convulsions, was suddenly attacked with a violent paroxysm which destroyed him, in consequence of the nurse having improperly threatened to throw him from a window, if he did not cease crying." An instance occurred to me about ten years ago, in which a child about six years old, was thrown into an extremely violent and protracted paroxysm of convulsions, by her sisters suddenly appearing before her, in a frightful mask.

It is a remarkable fact, that violent mental emotions or excessive bodily fatigue on the part of the nurse, sometimes produces the most alarming effects on the system of the suckling infant. A striking case, in point, is related in one of the early numbers of Hufeland's Journal. A woman, immediately after a vehement burst of rage, put her infant to her breast. In less than twenty minutes the child was seized with a violent paroxysm of convulsions, although it had previously been wholly free from any manifestations of ill health. Mr. Gillibert, mentions the case of a child who died of convulsions, "after having sucked a nurse who had been exposed to hard labor under a burning sun;" and Boerhaave, has given an account of two instances of epilepsy, which were in the first place excited, by being suckled immediately after the nurses had been under the influence of violent fits of passion Baumes, also, states, that one of his professional brethren had lost an infant suddenly by convulsions, in consequence of having been suckled by a woman soon after she had been violently exasperated. Many more instances, of a similar character might be collected from authors; and although an infant may be affected with convulsions, under circumstances of this kind, from causes wholly independent of the nurse, there can be no doubt, that the most serious consequences may sometimes result to the infant, by being suckled by a woman of an impetuous and ungovernable temper.

The Prognosis of infantile convulsive affections must depend mainly on the nature of the exciting cause, and the violence and duration of the attack. Cases arising from a primary irritation located in the alimentary canal, or from the irritation of dentition, are, *cæteris paribus*, always less dangerous than instances depending on a primary irritation or lesion of the brain, or its spinal prolongation. Even purely sympathetic irritative convulsions, arising from intestinal or dental irritation, may terminate fatally, by the shock and structural lesion which the brain may receive from the violent determination of blood which in some instances takes place to the vessels of the encephalon. This is more particularly apt to be the case in children of a corpulent and very plethoric habit, and where the convulsive attacks are of a protracted duration. In ordinary habits, there is but little to be apprehended from convulsions during infancy, when the attacks are slight and of short duration; and this observation applies especially to those instances which, instead of leaving the infant in a dull and lethargic condition, are almost "immediately succeeded by the natural cheerfulness of the child." (North.) When death occurs suddenly during a paroxysm of convulsions, we almost always perceive manifest signs of strong sanguineous congestion in the vessels of the head,—such as a darkish and turgid aspect of the face, fulness of the veins of the neck and head, heavy and almost stertorous breathing; and in such instances, the little patient dies "in a state nearly allied to apoplexy in the adult." The reviewer of North's excellent treatise on this affection, asserts that he has made more than thirty dissections of children who had died of convulsions, and that he invariably found the vessels of the encephalon strongly engorged with blood, attended with more or less serum in the ventricles of the brain; and, in several cases, "considerable extravasation of blood from a ruptured vessel" was detected. When paralysis and squinting occur, the most serious cerebral lesion may be inferred, and the prognosis is, of course, of the most unfavorable kind. Convulsions that come on suddenly, without any premonitory symptoms, are, in general, much more apt to terminate favorably, than those cases which supervene after a considerable period of slight indisposition—such as great fretfulness, starting from sleep, grinding the teeth, occasional flushes on one or both cheeks, a variable appetite, deranged state of the bowels, &c.

Treatment.—It has been doubted whether any course of treatment during the convulsive paroxysms, is capable of shortening its course, although it might mitigate its violence and, perhaps, obviate a fatal termination. In general this is unquestionably the case; yet I am inclined to think, that in some instances, the paroxysm may be shortened, as well as moderated in its violence, by appropriate remedial applications.

The chief indications to be attended to in the treatment of convulsive affections are: to obviate, as far as may be in our power, the influence of the remote or exciting cause; to allay cerebral and general nervous irritation; and especially, to counteract the preternatural determination of blood to the brain.

When called to a child affected with convulsions, its gums should be immediately examined. If they present a swollen and inflamed or irritated appearance from teething, they should be at once freely divided down to the advancing teeth. This measure can never be omitted, where the gums are distended and irritated without the most culpable neglect. Care should be taken that the incision be sufficiently deep to divide, completely, the firm membranous expansion which covers the crown of the approaching tooth; for a mere superficial division of the gums, can afford but very little or no benefit.

Should there be reason to believe, that the convulsions are the consequence of an oppressed state of the stomach from crude or indigestible ingesta or acrid secretions, immediate steps should be taken to remove the offending cause. If any unusual food, or substances of difficult digestion have been received into the stomach a short time previous to the occurrence of the convulsions, it will be proper to administer a full dose of ipecacuanna, in order to evacuate the contents of the stomach as speedily as possible. To remove the irritating matters that may be lodged in the intestines, purgative enemata, should be freely administered. In all instances, indeed, stimulating injections are decidedly proper, and whatever other remedies may be employed these, if the necessary means are at hand, should never be neglected.

Blood-letting, though not always applicable, is in some instances a very important auxiliary in the management of these affections. A principal object in the treatment of convulsions is to protect the brain from fatal oppression: and for this purpose bleeding is one of our most efficient means. Where the signs of strong determination to the head are manifest—and especially in robust and plethoric children, blood should be promptly abstracted. On the contrary, however, it will be prudent to abstain from this evacuation in patients of a weak and relaxed habit, and, where the ordinary evidences of vascular engorgement are absent. With regard to *local* bleeding, by *leeches* to the head, my own experience accords entirely with the following observations of Dr. North. "I have never seen well marked symptoms of determination to the head in children removed by leeches, however freely they were applied. Their application never fails to annoy the little patient considerably, and their effect is not to be relied on." If it be deemed necessary to draw blood directly from the vessels of the head, this writer recommends bleeding from the jugular vein, or by cupping upon the temples or behind the ears. In cases where the little patient sinks into a state of coma, with flushed countenance, throbbing of the carotids, &c. after an attack of convulsion, local depletion, in any of these latter muscles, is sometimes indispensable to the safety of the patient's life.

Révulsive applications are among the most useful remedies we possess for moderating or arresting convulsions. *Warm pediluvium*, the water being as warm as can be borne without injuring the skin, is one of the most beneficial of this class of remedies. This measure is particularly apt to afford relief in convulsions excited by the irritation of difficult dentition. The good effects of warmth applied to the feet, are always much enhanced by cold applications to the head. While the feet and legs are immersed in wárm water, a piece of flannel, wet with cold water, should constantly be applied over the head and temples. These measures are especially important in cases attended with symptoms of sanguineous congestion in the head, and cannot be omitted without losing one of our most efficacious remedies in such affections. Not unfrequently, these applications, moderate the violence of the convulsions at once, and bring them to a speedy and favorable termination. "In many instances." says Mr. North, "I believe I have rescued children from a state of great danger, by the incessant application of cold to the head." While these applications are being made, "the countenance and pulse should be attentively watched. When paleness and collapse of the face supervene, and the pulse declines or intermits, the cold applications should be suspended, and the head and trunk covered with a dry cloth; but as soon as signs of reaction return, the process is to be resumed even to the third or fourth time, till its good effects shall be decisive and manifest in the suppression of all convulsive motions." The French and German physicians, frequently employ the warm bath, immersing the whole body; while ice is applied to the top of the head. I am inclined to believe however, that more benefit may in general be derived from merely placing the inferior extremities in the bath; for the tendency of general immersion in the warm bath, to increase the flow of blood to the head, is always very considerable; whilst the application of warmth to the inferior parts of the body, often exerts a powerfully derivative effect upon the turgid vessels of the head. Dr. Currie, in his valuable work on the use of cold water, asserts from much experience, that *cold* effusions are highly efficacious in removing the convulsions of children, from whatever cause they may arise. I have witnessed one instance in which this remedy was tried, and the result was highly gratifying. When the countenance is flushed and turgid, the surface warm, and the pulse full and active, there can be no doubt, I think, of the usefulness of cold effusions. The child's head should be raised and the water poured on it, out of a pitcher. In cases of an opposite character, however, that is, where the face is pale, the extremities cool, and the pulse small, the practice would, probably, be attended with very serious mischief.

Counter-irritating applications, also, are decidedly indicated. Blisters are in general too slow in their effects to derive any particular advantage from them during the paroxysm. Nevertheless, where there is reason to apprehend a repetition of the attacks, small blisters laid behind the ears or on the back of the neck, may afford considerable benefit. Vesication on this part is particularly calculated to afford advantage in those cases which supervene, on the drying up of superficial and discharging ulcerations behind the ears. Some benefit may be also expected from the application of blisters to the inferior extremities. Dr. Clark strongly advises the application of vesicatories to the calves of the legs; and Dr. North asserts that in many cases attended with strong determination of blood to the head "*without any general vascular excitement*," he has obtained the best effects from this practice. The common practice of applying blisters to the scalp, in diseases of this kind, is by no means advisable. They not only almost invariably fail of doing good, when applied in this way, in any of the inflammatory or congestive affections of the brain, but often prove decidedly prejudicial. In hydrocephalus, for instance, I have never known even the slightest temporary advantage to result from vesicating the scalp. *Sinapisms*, are in general more beneficial, as counter-irritating applications, than blisters. Their operation is prompt and energetic, and when applied to the inferior extremities, or *along the tract of the spine*, they often contribute, very materially to the reduction of the vascular excitement of the brain. "In my opinion," says Dr. Clark, "we have too little confidence in the powers of sinapisms applied to the feet, where there is a great degree of cerebral excitement to be contended with. In many cases, both of children and adults, I have found them to be very powerful auxiliaries."

Much benefit may also be derived from rubefacient frictions,—particularly along the course of the spine. I think I have seen much advantage obtained from frictions over the spinal regions with a mixture of equal parts of the oil of amber, laudanum, and spirits of camphor. I seldom omit this application in the convulsions of very young infants, and I feel confident it has frequently been of much service. When the convulsions assume a tetanic character—the body remaining for some time, rigidly bent backward, leeching, and sinapisms, over the spinal region, would seem to be especially indicated. Indeed, in all instances, counter-irritating applications along the tract of the spine, are appropriate, and calculated to do good.

Purgatives, if they can be introduced into the stomach, ought, in no instance to be omitted. In cases depending upon intestinal irritation from acrid secretions, or other offensive matters lodged in the alimentary canal, free purgation may be deemed indispensable. Calomel in combination with jalap, or where there is reason to suspect verminous irritation, a strong infusion of senna, and spigelia, are very suitable remedies for this purpose.

Some practitioners are in the habit of giving large doses o calomel, in the convulsions of infants, under an idea that there is something peculiarly beneficial in the operation of this article in affections of this kind, and I am inclined to think that this opinion is well founded. Dr North, however, objects strongly to this practice, as tending in no small degree to injure the constitutions of children. That calomel is too heedlessly and indiscriminately given in the affections of children, particularly in the United States, I have not the smallest doubt. I am quite certain, that I have seen instances where this practice was the cause of great and irreparable constitutional injury. Nevertheless, it has appeared to me, that one or two active doses of this article, so as to cause free alvine evacuations, is capable of procuring more advantage, in general, in the convulsions of infants, than any of the other usual means for evacuating the alimentary canal. Indeed, it has seemed to me, that even where the calomel fails to excite purging, or before this effect is produced, considerable benefit sometimes results from its immediate impressions on the nerves of the stomach. Dr. Brachet,* who appears to have had very extensive experience in affections of this kind, strongly recommends the use of calomel in combination with the extract of henbane in infantile convulsions. To a child of two years old, he gave two grains of calomel every two hours, and one grain and a half of the extract of black henbane every half hour, with the happiest effect. I have myself, in a few instances of obstinate convulsions, used this combination, and in one case at least, with unequivocal benefit.

Formerly, physicians were much in the habit of exhibiting antispasmodics in infantile convulsions—such as assafœtida, camphor, valerian, musk, and ol. succine. In children of very nervous or irritable habits, some benefit may occasionally be derived, during the fit, from assafœtida, musk, or the oil of amber, provided no signs of determination to the head be present. Upon the whole, however, these are, under the most favorable circumstances of very equivocal propriety; and they are decidedly improper, where the arterial reaction is considerable, and the vessels of the head engorged.

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* Memoire sur les Convulsions des Enfans. Paris, 1824.

Opium is a remedy that may, either do very serious mischief or no small degree of good, according to the particular state of the system, and the character of the attending circumstances of the cases. In instances attended with febrile irritation, and a strong determination of blood to the brain, nothing perhaps would be more likely to do harm than opium, more especially in robust and plethoric subjects. In general, wherever local or general depletion is indicated, opiates may be regarded as improper. On the contrary, however, where convulsions arise symphathetically, in consequence of some remote and fixed irritation—as in the alimentary canal, and the habit of the patient is irritable, relaxed, and feeble, opium, judiciously administered, may afford decided benefit. It is indeed, *anceps remedium*, but the practitioner, who has learned to discriminate between the circumstances that indicate or contra-indicate the propriety of its use, will often find it a most valuable auxiliary. In general, it is altogether inadmissible in convulsions arising from the irritation of dentition; and in cases depending on causes seated within the head, it is, if possible, still more inappropriate. When the primary irritation is located in the alimentary canal, we may, under the other favorable circumstances just mentioned, employ small doses of Dover's powder, repeated according to the exigencies of the case, with manifest advantage. Opiate embrocations over the chest and spinal region, will also, in such cases, afford benefit. These are particularly useful, where from great nervous irritability there is a strong tendency to convulsive attacks, unaccompanied with general, vascular irritation. In that irritative condition of the system to which Dr. Nicholl has applied the term "*cerebral erethism*," and which, if not subdued, almost invariably terminates in some form of convulsions, opiates in alternation with laxatives, are in general decidedly beneficial. When the child is sleepless at night, and unusually peevish and fretful during the day, with a small and rapid pulse, a pale and anxious expression of the countenance, slight twitchings of different muscles and tendons, the carotids, beating violently for a moment and then suddenly subsiding into languid action, sudden starting, agitation or tremor, from slight causes;—in this condition, depletion is generally injurious, and nothing affords so much relief as narcotics. Brachet recommends the em ployment of henbane, but I doubt whether we possess any article of this kind more appropriate and beneficial than Dover's powder, given in small but repeated doses in union with small portions of calomel, and with an occasional laxative enema. Mr. North states, that in cases of this kind, he has frequently given the extract of hemlock or of henbane in conjunction with alkalies, with great advantage.

The German physicians are much in the habit of administering the *oil of valerian*, in convulsive affections, unconnected with febrile irritation, or independent of local disease. I have known very considerable advantage derived from this remedy, in cases attended with great irritability of the nervous system, and a pale and contracted appearance of the countenance. In convulsive affections arising from verminous irritation, with a languid and relaxed state of the system, I am inclined to regard this remedy as entitled to much attention.

In cases attended with prominent gastric derangement and acidity of the primæ viæ—instances of which are frequently met with in very young infants, *alkine remedies* are especially indicated. Three or four grains of the bi-carbonate of soda dissolved in a teaspoonful of the syrup of rhubarb, with a drop of the oil of valerian, forms an excellent remedy in such cases. The *oxyde of zinc* also, has been much employed in the convulsive affections of children. Mr. North states that he has frequently prescribed this remedy, "and in many instances with much advantage." In cases wholly independent of organic disease or unconnected with febrile irritation, this article will occasionally do much good. Dr. Brachet considers it among our most useful remedies, in cases recurring from the force of habit and from inordinate nervous irritability. He recommends it to be given in union with cicuta or henbane. He relates several cases, in which the protracted use of this combination, entirely prevented the repetition of the convulsive paroxysm, and "to which the children had been subject for a very considerable time."

To mitigate the violence of the convulsive paroxysm, some writers recommend pressure upon the epigastrium, as almost invariably beneficial. Dr. Brown,[*] asserts, that a gradually increased pressure upon the region of the stomach with the hands, usually relieves the struggles in a remarkable manner. If the pressure is suspended for a moment, "the convulsions will return with increased violence," but on renewing the pressure, the struggles are again speedily moderated.

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[*] Journal Gen. de Medecine, tome xxxi. p. 437.

Mr. North, states, that in several cases attended with "every symptom of approaching convulsions," the experiment of compressing the carotid arteries, as recommended by Dr. Parry in the treatment of adults, has appeared to him to have had a most excellent effect. "It is certainly to be regretted," he says, "that the plan is not more frequently adopted in the cerebral derangements of children which threaten to produce convulsions, but which do not either demand or justify the abstraction of blood." Dr. Blaud has published an interesting paper, from which it appears that he has employed compression of the carotids, in children "with the most gratifying result." There can be no doubt indeed that in cases attended with undue determination of blood to the brain, much benefit must result from this practice. It is extremely difficult, however, in most children to apply sufficient compression to the carotids, to produce any obvious effect upon the cerebral circulation. Where it is practicable it may be resorted to with great propriety, and probably with much advantage to the patient.

[The naked fact, that the convulsions of infancy are a hundred-fold more frequent than those of subsequent life, is to be accounted for, chiefly, on the ground of the early and persistent abuse of the stomach and bowels with opiates and other medicines, which are wholly unnecessary. The non-resistance of infancy to all this violence, insures the more certain operation of the agents employed. The brain and nervous system, by reason of incessant sympathy with the stomach, are early and continuously implicated. Thus it is, that all ages from the first month to three or four years, present us with alarming convulsions. The lesson taught by the facts of the case, is to guard the infant, from its first day, against every sort of medicine, excepting by injection or friction, and to employ these only when absolutely necessary.]

CHAPTER XL.

INFANTILE EPILEPSY.

Epilepsy is a disease of frequent occurrence in children. It is liable to be confounded with simple convulsions, but the following circumstances will, generally, enable us to distinguish them without much difficulty or risk of mistake. In the epileptic paroxysm there is a total abolition of the senses, from the commencement to the termination of the attack. In simple convulsions, on the contrary, "the senses are only abolished during the violence of the fit, and some degree of consciousness is manifested when the paroxysm is mitigated, and, often long before the convulsions have entirely subsided." Epileptic convulsions almost invariably terminate in a deep stupor, from which the patient awakes in a state of confused and stupid surprise, or with a dull, heavy, and fatuous expression of the countenance. In simple convulsions this rarely happens, except in cases of extreme violence, attended with sanguineous congestion in the brain.

The predisposition to epilepsy is sometimes *hereditary;* and when this is the case, almost any thing which is capable of disturbing the natural actions of the system, may excite the disease. Boerhaave, mentions an instance, in which all the children of an epileptic father died of this disease, and Stahl has related a similar occurrence. Tissot, also, mentions a remarkable instance of this kind. An epileptic man had eight sons and three grandsons, all of whom, he says, became affected with this disease. The *exciting* causes of epilepsy do not differ from those which produce simple convulsions, and as these have already been described in the preceding chapter, it is unnecessary to repeat them in this place. Many of the epileptic affections of children, commence, in the form of simple convulsions, which by repeated recurrence and mismanagement ultimately acquire a strictly epileptic form. "It is to be remembered, that however trifling may be the original convulsive affection, if it is frequently repeated, and the patient is of a highly susceptible disposition, it may gradually increase in severity, until it, at length, degenerates into pure epilepsy.

In children, perhaps the most fertile source of epilepsy may be traced to derangement of the stomach and bowels, from which, at first slight attacks of simple convulsions may succeed, which ultimately acquire the character of epilepsy; or an epileptic paroxysm at once occurs, without any convulsive malady of a milder nature."

On the subject of the *proximate cause* of epilepsy, very discrepant opinions have been expressed by pathologists. Without entering into a detail of these opinions, all of which are hypothetical and many of them absurd, I shall content myself with a statement of those circumstances, which experience and observation appear to sanction, in relation to the pathology of this affection.

1. The immediate cause of the epileptic paroxysm, whatever its essential character may be, is always seated in the brain.

2. In the majority of fatal cases, organic and other obvious affections of the brain—particularly of the cerebellum, or of the meninges, are found on dissection, and which we may infer, contributed to the excitation of the epileptic paroxysm.

3. The cerebral affection is in some instances, primary, and the result of causes that act directly upon the brain. In others, probably in the majority of cases, it is secondary, depending on primary irritations located remotely from the brain.

4. Immediately, before the accession of the epileptic attack, it would seem, that vascular turgescence takes place, in the encephalon; and the pressure thus created, in co-operation with the general predisposition to the disease, and the organic cerebral affection, where such disorder exists, is probably the immediate exciting cause of the paroxysm.

The epileptic attack sometimes comes on suddenly without any intimation of its approach. In general however, certain symptoms precede the occurrence of the paroxysm, and of these the following are the most common: a dull heavy pain, or a confused and distressing feeling in the head, giddiness, sparks, or the appearance of light fluttering before the eyes; distention of the veins of the head and neck, a buzzing in the ears, palpitation of the heart, tremors and an agitated and alarmed appearance, starting during sleep, temporary confusion of mind, great drowsiness, spasmodic twitches of particular muscles, especially in those of the face, sudden pains in the stomach succeeded by nausea and perhaps vomiting, a sudden change of temper manifesting unusual perverseness, fretfulness or passion, a creeping sensation in various parts of the body, and rapid changes in the color and expression of the countenance.

In many instances the epileptic attack, invariably comes on at night while the child is sleeping. When the paroxysm occurs while the patient is sitting or on his feet, he suddenly falls down in a state of insensibility and immediately becomes more or less violently convulsed. In some cases the convulsive actions of the muscles, particularly those of the face are frightfully violent; the whole frame is violently agitated; the eye-lids are in constant motion; the eyes appear to project unnaturally and are fixed, or turned upwards so as to hide the cornea; the face is occasionally pale, but much more commonly, red or livid, "and sometimes almost black," and the veins of the head and neck are excessively turgid. The tongue is often spasmodically thrust from the mouth, and is sometimes severely injured by the teeth, from the forcible and rapid convulsive contraction of the jaws. Sometimes the teeth are firmly fixed, and at others, the jaws are widely and fixedly distended; the thumbs are, generally, firmly pressed in upon the palms of the hands; the head is thrown about in various directions, and sometimes becomes suddenly fixed in one position, from which no force can move it. The spasms are generally of the clonic kind, but in some instances, the muscles remain for a time rigidly contracted, the body being bent, either backwards or on one side, or forwards, as in tetanus. Occasionally the abdominal muscles are violently retracted towards the spine. The respiration is irregular, oppressed and sometimes extremely laborious and even stertorous, in violent cases. The convulsions sometimes subside for a moment, to be again renewed, with undiminished or increased violence. "The same remission of the convulsive movements, occurs also, frequently during the paroxysms of simple convulsions. During this cessation, however, the expression of the countenance, and the gestures of even a very young child, lead to the conviction that it is sensible of its state of suffering. Not so in the abatement of the true epileptic paroxysm. The child either lies motionless and totally insensible, or rolls its eyes about with a wandering and unfixed gaze, without the appearance of any degree of consciousness." In general, the convulsive actions are more conspicuous on one side of the body than on the other. Towards the termination of the paroxysm, a considerably quantity of a frothy saliva usually flows from the mouth, and in very violent cases, the feces and urine often pass off involuntarily. Sooner or later the convulsions abate—generally gradually, but occasionally quite abruptly. The breathing becomes freer; the pulse which during the fit is irregular, small, and frequent, becomes fuller and more regular; the countenance assumes a more composed appearance, and the patient finally falls into a state of stupor, or deep and heavy sleep, out of which he awakes with a feeling of languor, and confusion or torpor of mind, which generally continues for ten or twelve hours—the countenance exhibiting a vacant and stupid expression, with a dull, staring and wandering appearance of the eyes. In violent attacks, the mind is apt to remain obtuse and fatuous, and the temper irritable and morose, for several days after the paroxysm. During the heavy sleep in which the paroxysm usually terminates, the patient generally perspires freely, particularly about the head, neck and breast, and the perspiration has in many instances a very peculiar, offensive smell.

Epilepsy does not however always exhibit the violence and course of phenomena just described. Sometimes the patient remains fixed in the position "in which he happened to be at the moment of the attack, while the head is moved from side to side with great rapidity, all consciousness being destroyed." Occasionally instead of actual convulsions, there is a trembling of the whole body, with twitching of the tendons, which is succeeded by a tetanic rigidity of the whole frame and total unconsciousness. In some instances the attack supervenes suddenly without any sensations or appearances indicating its approach, and after a few moments of partial convulsions of the muscles of the face and neck, quickly subsides, and restores the patient to consciousness. In general the disease is much milder in infants before they are weaned, than in children of more advanced age. The symptoms during infancy, are commonly confined "to irregular and rapid motions of the eyes, convulsed contractions of the muscles of the face, blueness of the countenance and contraction of the lower jaw, with abolition of the senses," and their duration is seldom prolonged beyond ten minutes.

With regard to the duration of the epileptic paroxysm, great diversity occurs. The convulsive stage generally continues from five to ten minutes, sometimes for half an hour and occasionally much longer. In infants at the breast, as has just been observed, it is seldom protracted beyond eight or ten minutes, but after the usual period of weaning, particularly when the child is under the influence of painful dentition, the paroxysm is apt to continue a much longer time. In some instances one fit only occurs at a time; in other cases, several paroxysms occur in quick succession, the patient remaining in a state of stupor, during the intermissions. In general the first attacks are much shorter than those which occur after the disease has become confirmed in the system. The contrary, however, generally happens, when the first attack is excited by some sudden and violent mental impression, as terror. Much diversity, also, occurs in relation to the interval between the epileptic seizures. It is asserted by some writers, that epilepsy never occurs oftener than once a day." This, however, assuredly is not correct. I have seen one case, at least, in which two distinct paroxysms at times, occurred in the course of twenty-four hours; and Mr. North assures us that he has "certainly witnessed several epileptic paroxysms," in the same child, in the course of a day. It must be confessed, indeed, that instances of this kind are very uncommon, though the occurrence of a paroxysm daily, is not unfrequent. In general, however, the intervals between the attacks are much longer varying from a few days to several months. In some instances the paroxysms observe a more or less perfect periodicity in their occurrence; but the majority of cases are quite irregular in this respect.

One of the most distressing circumstances connected with this disease, is its tendency to impair the understanding,—to produce hebetude, and finally even total abolition of the mental faculties—a condition infinitely more lamentable than death itself. Much diversity, however, occurs, in relation to the effects of epilepsy in this respect, in different individuals. Some children will bear repeated and even violent attacks, without appearing to suffer any permanent injury either in body or mind; whilst in other instances the patient is soon destroyed during the paroxysm, "or is reduced to a state of idiotism." In all instances, however, where the disease continues for a long time, the mind is more or less enfeebled, however mild the paroxysm may be.

Epilepsy seldom proves fatal, except through the intervention of *apoplexy*. Although, the immediate danger of an epileptic paroxysm, is not in general very great, yet in relation to the sanability of the disease, the prognosis is always highly unfavorable. Even where a cure or suspension of the disease has been effected the liability to a relapse is always very considerable. I have seen instances where the disease returned after a suspension of its attacks for several years. When epilepsy depends on some organic affection within the head all attempts to effect a cure, must, almost necessarily end in disappointment. In what are called symptomatic cases—that is, where the disease is unconnected with structural disorder, depending solely on morbid predisposition and irritation in the nervous system, a cure may sometimes be effected by an appropriate course of management. After the mental faculties have become obviously impaired, by the repeated attacks of the disease, all hopes of a cure may be abandoned. Experience, too, has shewn that those epilepsies which commence soon after birth, or during early infancy, very rarely yield to remediate treatment. Richter observes that a long continuance of the sleep and subsequent stupor and confusion of mind, after the subsidence of the paroxysm, is a very unfavorable sign. Epilepsy from moral causes, such as terror, is generally extremely obstinate in its course (Lahn); and it is said, also, that those cases which come on at night during sleep, are, in general, much more intractable than such as occur during the day, and are preceded by premonitory symptoms (Richter). It has been affirmed by men of great experience that epilepsy occasionally ceases spontaneously on a change of climate, or at the age of puberty where the disease has not been of protracted duration, (Lentin). Hereditary epilepsy, is perhaps always incurable. The morbid appearances on dissection, are often similar to those which occur in apoplexy and palsy. In many instances the cerebellum, exhibits stronger traces of structural disorder than the cerebrum, though this, as indeed the whole encephalon is usually found, highly engorged with blood. Wensel, whose dissections were very numerous, states, that in the majority of instances, he found the pineal gland, and parts immediately surrounding it, more frequently in a state of disease than any other part of the cerebrum. The cerebellum was in many cases, conspicuously diseased. It was sometimes preternaturally soft and of a dusky red color; but much more commonly, this portion of the brain was of a hard and compact consistence, with a peculiar yellowish friable matter lodged between the lobes. These dissections, however, refer to adult subjects, and it may be doubted, whether similar appearances would present themselves in children. Roederer, dissected many children who had died of this disease, and he affirms, that structural disorder of the cerebrum was a frequent occurrence. Esquirol, states that in his dissections at the Salpêtriere, he found in nine cases out of ten, the spinal marrow or its membranes in a distinctly diseased condition. The spinal marrow was generally much softer than natural, in different parts of its length; and the meninges almost uniformly presented unequivocal traces of previous inflammation. It must be confessed, however, that in some instances, the brain and its coverings, as well as the spinal marrow do not exhibit the slightest evidence of structural disease, though much engorgement of the blood-vessels occurs in nearly all cases.

Treatment.—The causes of epilepsy are so various, and in general so wholly beyond our cognizance, that we can seldom lay down any general and rational therapeutic principles for the guidance of our curative efforts. Medical treatment in this disease, is therefore often necessarily purely empirical. If we wish to make any effort against the progress of this distressing malady, we have, frequently, no other course left open to us, than to resort to those remedies which, according to the reports of eminent physicians, or our own experience, have occasionally succeeded in removing the disease, without our being able, to give any other satisfactory reason for doing so. This, however, is not always the case. In some instances we have sufficient light in the symptoms and causes of the disease, to enable us to form a consistent and rational plan of treatment. When called to a case of epilepsy, therefore, the first object of the practitioner should be to inquire into the nature of the exciting cause, its duration, the time and manner of its attack, the constitutional habit of the patient, his age, previous or concomitant diseases, his habitual temper and disposition of mind, his manner of living, his probable hereditary predispositions, in short, into every thing which can throw light on the particular character of the disease. By well directed inquiries of this kind, we may sometimes find a clue, which will serve to guide us in the treatment to a fortunate result.

In cases preceded by *obvious* premonitory symptoms, we may sometimes prevent the accession of the paroxysm by the timely administration of some remedy capable of producing a sudden change in the excitement of the nervous system. When in children of robust and plethoric habits any feelings occur which may appear to indicate the approach of an epileptic paroxysm—more especially, when the child complains of giddiness, with the veins of the head turgid, and the carotids beating strongly, prompt and efficient *bleeding* will probably keep off the impending epileptic attack. When the premonitory stage is protracted, and connected with manifest signs of derangement of the bowels, *purgatives* are indicated and may occasionally postpone the approaching paroxysm. *Emetics* are, particularly recommended by Richter, for this purpose. They are most apt to prove serviceable, in keep.ng off the attack, he says, in those cases which continue to recur from the influence of habit, after the original exciting cause has been removed. He asserts that he succeeded in effecting an entire cure, in a case of this kind, by repeatedly suspending the paroxysm, by the administration of an active emetic a short time before the expected occurrence of the epileptic attack. Many eminent authorities, however, might be cited, against the use of emetics in this affection; and as a general rule they are certainly to be regarded, as of very doubtful propriety. In cases attended with strong congestion in the vessels of the head, the operation of an emetic, would doubtless be attended with very considerable risk of injury. When the epileptic paroxysm is preceded, by the premonitory sensation termed *aura* in one of the extremities—that is, by a peculiar feeling of heat, as if a current of warm air were directed on the part, passing more or less rapidly from one of the inferior extremities to the head, the paroxysm may, sometimes be effectually prevented, by compressing the limb firmly, with a tourniquet or bandage, applied above the part, at which the aura may have reached. Dr. Cullen observes, that "a ligature upon the limb, above the part, from which the aura arises should always, in those cases be applied, both because the prevention of a fit breaks the habit of the disease, and because the frequent compression renders the nerves less fit to propagate the aura." An instance is related in the London Medical and Physical Journal, in which pressure in this way, prevented the occurrence of the paroxysm. (Cook.) Brechtedt and Michaelis, also, mention instances, of the successful employment of compression in cases preceded by the aura. It must be confessed, however, that cases attended with this remarkable premonitory symptom are extremely uncommon. In the course of my practice I have met with but two instances of this kind; and in both, the passage of the aura from the leg to the head was so rapid, and came on so unexpectedly, that there was not sufficient time given to resort to this means for preventing the accession of the fit.

The immediate danger, attending an epileptic paroxysm, depends almost entirely on the vascular turgescence in the brain; for when death takes place during the attack, it is almost invariably, in consequence of cerebral oppression, from excessive engorgement of the cephalic circulation—terminating in apoplexy. During the paroxysm, therefore, our principal object should be to diminish the preternatural congestion of the cerebral vessels, in order to protect the brain against fatal oppression or lesion. The importance of attending to this indication, is particularly great, in children of robust and plethoric habits, and where the signs of inordinate sanguineous congestion in the head, are conspicuous. In instances of this kind, blood ought to be promptly and freely abstracted, sinapisms applied to the feet, and cold applications made to the head, while every thing which might compress the veins of the neck and impede the free return of blood from the brain to the heart, should be removed. Although no treatment during the paroxysms, can, I think materially mitigate its violence or shorten its duration, yet by these remedies we may at least protect the brain, and obviate a fatal termination.

It is during the intervals of the attacks, however, that our principal efforts must be made for preventing the recurrence of the paroxysms or effecting a permanent removal of the disease. I have already adverted to the importance of attending to the nature of the exciting cause, in instituting a course of treatment, for its radical cure. If our inquiries, in this respect are successful, it will aid us very materially, in the adoption of an appropriate plan of treatment. Thus, if on a careful examination, it be found that the bowels are in a loaded and irritated state, and particularly, if manifestations of intestinal disorder existed previous to the occurrence of the disease, it will, undoubtedly be very proper to attend to the state of the alimentary canal, as an important preparatory measure in the treatment. In children, epilepsy is frequently originated by gastro-intestinal irritation; and in many cases arising from other causes, the disease is aggravated and sustained by a deranged state of the alimentary canal. In cases of this kind' *emetics*, according to the experience of many eminent physicians, have occasionally produced the happiest effects. Richter declares, that in some instances of this disease attended with nausea, flatulency, acidity, colic pains, and other manifestations of indigestion and gastro-intestinal irritation, he has resorted to a course of emetics with entire success. In a child about five years old, which had been affected with epileptic paroxysms, twice and sometimes three times a month, for upwards of a year and a half, I succeeded in arresting the progress of the disease entirely by a course of emetics. An efficient dose of ipecacuanna in union with a few grains of calomel, was administered every third day, and continued for nearly six weeks. This case came on, after a severe attack of ague, which was speedily cured with Fowler's arsenical solution. When the disease is attended with a prevailing disposition to generate acid in the primæ viæ, as is frequently the case in infants, alkaline remedies, in conjunction with mild tonics, and an occasional laxative, are sometimes decidedly beneficial. The famous powder of Margrave, which was formerly so much employed, by the Germans, in infantile epilepsy owes, whatever power it possesses to its antacid, tonic and aperient virtues. It is composed of one ounce of powdered mistletoe, the same quantity of white sugar, and half an ounce of the carbonate of magnesia. The dose is a teaspoonful, two or three times a day, for a child under five years old. When vomiting occurs at the end of the paroxysm, we may presume, says Richter, that, the primary cause of the disease is located in the stomach; he mentions, also, a peculiar tremulous motion of the under lip, as a sign of gastric irritation, from vitiated secretions or other offensive matters. Van Swicten, states, that in a case of epilepsy, in a child, in which the paroxysms were invariably preceded by this tremulous motion of the *under* lip, he employed emetics and purgatives with entire success. It need scarcely be observed, that in cases attended with worms in the bowels anthelmintic remedies should be employed. More than twenty years ago, I saw a child, which for upwards of six months, had one, and sometimes two, well marked epileptic paroxysms every week, attended with paralysis of the left arm, and which was, finally entirely relieved of the convulsive affection, by the expulsion of an enormous mass of lumbrici, in consequence of the use of a strong decoction of spigelia. In general small doses of calomel, with an occasional active dose of castor oil and turpentine, will answer better in such cases than any other remedies we possess. The German physicians are much in favor of the employment of full doses of powdered valerian root, in epilepsies depending on verminous irritation. I have known the paroxysm to be suspended for many months by the use of this article in union with the oxyde of zinc; and from cases published in late European medical journals it would appear that valerian in conjunction with the elutriated oxyde of tin, has been used with complete success. From ten to twenty grains of the former, with from three to six grains of the latter article, may be given three times daily, to children of from two to seven years old.

In cases that come on soon after the sudden drying up of some long standing eruption about the head, or discharging sores behind the ears, the manifest indication is to restore the local affection, or to substitute in their stead others, artificially. Issues, setons, blisters, and frictions with tartar emetic ointment, may be advantageously resorted to for this purpose. Diaphoretics, purgatives, warm-bathing and stimulating frictions, are also appropriate remedies in such cases. Prichard recommends mercury to the extent of producing ptyalism in cases arising from this cause; and Richter states, that he has found musk and camphor, peculiarly beneficial in this variety of this disease.

Epilepsy from local injuries of the head, has been cured by surgical operation. Successful instances of trepanning in cases of this kind are related by Boerhaave, Thenier, Stalpart, Van der Weil, and Tissot. Dr. Massie,* has given an account of a case of epilepsy which was produced by a blow on the head, and consequent depression of a portion of the cranial bones. After the disease had continued for nearly four years the patient was trepanned, and a spicula of the depressed bone removed after which the paroxysm did not return. Dr. Dudley of Lexington, also succeeded in curing a case of Epilepsy, by removing a spicula of bone, which had penetrated the substance of the brain; and Dr. Rogers of New-York succeeded in a similar case by such an operation. Dr. Guild, of Alabama, has given an extremely interesting account of a case of epilepsy, which deserves to be consulted as a remarkable instance of successful trephining in this disease.†

In very many cases, however, the most careful inquiries lead us to no satisfactory information, as to the primary or exciting cause of the disease; and in the majority of cases, the causes are of such a character as to be wholly beyond our control; or the original cause may have disappeared, and the disease be continued by the influence of habit, in co-operation with an acquired or hereditary predisposition. Under such circumstances, we have no resourses left us, but those which are founded on bare experience—and we are obliged if we wish to make any remedial effort, to resort to some one, or many by turns, of that long list of remedies, which, according to the testimony of eminent practitioners or our own observations, have been known occasionally to effect a cure. These remedies are, generally, much decried in the books, as *empirical*. It is, nevertheless, certain, that many of them, have, at times, cured, even inveterate cases, and when all lights to a more rational course of treatment fail, it can neither be wise nor proper to reject these "empirical" resources. The truth is, that in cases that are unconnected with organic disease and continued merely by the force of an established predisposition and habit, any thing which is capable of producing a permanent change in the excitability and excitement of the brain and nerves, may under favorable circumstances, suspend, or wholly arrest the recurrence of the paroxysms. The following are the most celebrated of these anti-epileptic remedies:

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* Philadel. Med. and Physical Journal. 1829. No. 35.

† American Journal of Medical Science. October, 1829.

Valerian was formerly much employed in this disease. Quarin asserts, that he has more frequently found it beneficial in the epilepsies of infants than any other medicine. It is said to be most useful in cases depending on verminous irritation. It should be given in large doses. Biett, who speaks in the most favorable terms of its powers in this disease, recommends the oil. From five to ten drops of the oil of valerian may be given to a child of from two to seven years old, three or four times daily. I have in several instances postponed the paroxysms for two and three months by the use of this remedy. The *animal oil of Dipple*, has also been much commended as a remedy in this disease. Hoffman, Cullen, Bang, Kortrum, Quarin, Werlhof and Richter, mention cases that yielded to its powers. The latter writer found it most useful in epilepsies arising from repelled cutaneous eruptions. The dose for a child between two and ten years old is from five to ten drops. Of late years, the *spirits of turpentine*, has been strongly recommended in certain varieties of epilepsy in adults. Biett has employed it in infantile epilepsy with complete success. It is particularly adapted to cases depending on intestinal irritation. The *oxyde of zinc*, is generally regarded as one of our most valuable remedies in epilepsy: and from the testimony extant in relation to its powers, as well as from facts that have come under my own notice, I am inclined to regard it as a medicine of considerable powers in this affection. I used this article in the case of a child, about four years ago, with unquestionable advantage. The fit which recurred twice and sometimes three times a month, was suspended by the use of this medicine for upwards of four months, and it never after returned more than once a month. This medicine ought to be given in as large doses as the stomach will bear. A child two years old may begin with a quarter of a grain, and gradually increased to a half or even a whole grain, and the dose should be repeated thrice daily. The *sulphate of zinc* also, has been successfully employed in this affection. Weikert mentions several cases in children, which yielded to this remedy. Lettoom, Cullen, Ideler and others, speak in favorable terms of its powers. This, and the preceding article, appear to be most apt to do good, in cases, recurring from habit, and where the original exciting cause is no longer present. The *cuprum ammoniacum*, was a favorite remedy with Cullen, in the treatment of this affection. I have used it very frequently, in the epilepsies of children; but generally with but little or no obvious advantage, excepting one instance in which it effected an entire cure. It should never be given in cases attended with a morbidly irritable, or irritated state of the alimentary canal. Richter asserts, that it is only calculated to do good in torpid, inirritable and phlegmatic habits, connected with a healthy condition of the digestive functions. According to the experience of Haase an eminent German writer, this article is much better adapted to the cure of epilepsy in adults, than in children; and he accords with Richter in regarding inirritable and phlegmatic subjects, as most apt to derive benefit from its use. The dose to a child between two and ten years, is from the 20th to 8th of a grain three times daily, and gradually increased until it creates nausea. No remedy has of late years been more frequently employed, in epileptic affections, than the *nitrate of silver;* and from the various and highly respectable testimonies we have in relation to its powers, it is without doubt, entitled to considerable attention as a remedy in this disease. To derive any decided advantage from its use, it ought to be given in as large doses as the stomach will bear. Small or inefficient doses very rarely, if ever, make any obvious impressions on the disease. When given in the form of pills, it may in general be administered in much larger doses without unpleasant effects on the alimentary canal, than when exhibited in solution. It may be advantageously given in union with the extract of cicuta, or of hyoscyamus. Richter states that this article seldom does any good unless the digestive organs are in a healthy and active condition; and Dr. Harrison considers it as particularly adapted to those cases which are connected with a morbid irritability of the nervous system. Out of a considerable number of cases, in which I have employed this remedy, one only was permanently relieved under its use. This case was in a child, about seven years old, and was occasioned by sudden and violent terror. When recourse is had to this remedy, its use ought to be continued, without interruption, for several months; for it will sometimes manifest no beneficial effects for many months, yet finally arrest the progress of the disease. It is a common practice to discontinue the use of this and other similar remedies, if no obvious advantage is derived from it, in the course of five or six weeks. This I am persuaded, is sometimes the cause of failure in our attempts to subdue this malady. I once succeeded in curing a case of seven years standing by persisting with the use of the same remedy for nine months.

Tin, also, has been strongly recommended as a remedy in this affection. Dr. Shearman asserts, that the elutriated oxyde of tin has more frequently succeeded in his hands, than any other remedy he has ever employed. To children, it may be given in doses of from three to ten grains, three or four times daily, It is said to be particularly useful in cases connected with verminous irritation. I have employed this article in combination with powdered valerian root, in one instance with the effect of postponing the paroxysm for five or six weeks beyond the usual time of its recurrence. In adults I have known the *sugar of lead* to be used with entire success; and many authorities of great respectability might be cited, in favor of its employment in this affection. Dr. Rush cured two cases with this remedy, and Drs. Spence and Agnew, declare that they have used it with great advantage in some cases. A great variety of other remedies have been employed with occasional benefit, and are recommended by different writers, as worthy of attention in this intractable malady. Some of the narcotics, particularly *opium*, *camphor*, *belladonna* and *stramonium*, have occasionally done some good. Very generally, however, no advantage whatever, can be obtained from remedies of this kind; and they are often decidedly injurious, by increasing the flow of blood to the head. The root of the *pæony* was formerly much esteemed for its sanative powers in this complaint. Hufeland, speaks of it in very favorable terms. He asserts that in the epileptic affections of children, it is one of our most valuable remedies. From three to ten grains of the dried root, according to the age of the child, may be given three times daily; or an infusion of an ounce of the root to a pint of water, may be given in doses of one or two tea-spoonfuls, every three or four hours. Upwards of twenty years ago, I was acquainted with an empiric, who used this article in epilepsy, and I know that he effected an entire cure in several cases, one of which had previously been under my own care. The following mixture has been used with complete success in some instances of this disease, and frequently with the effect of postponing the paroxysm for many months. Dr. Otto of Philadelphia, assured me that he has, repeatedly employed it with very decided advantage.*

Mercury, carried to the extent of producing salivation, has been known to cure this disease. It is said to be most apt to prove serviceable in cases depending on suppressed discharges or repelled chronic cutaneous eruptions. Bang, Willes, I. Frank, Tissot, and others mention cases in which this remedy was successfully used.

Various *external* means have also been employed, and occasionally with decided benefit, in the treatment of this complaint. *Galvanism*, has been employed, and in a few instances with great advantage. According to the experience of Mansford, little or no benefit is to be derived from galvanism in this disease unless it be applied steadily and uninteruptedly, and only with a weak force. The negative pole, he says, should be applied as near the brain as possible, and the positive one on some distant part of the body. Setons, and issues may be useful in certain cases, connected with a prevailing tendency to inordinate determinations of blood to the head, or arising from suppressed discharges or repelled eruptions. Pustulation with tartar emetic ointment, was used by Mr. Crighton, in six cases with very obvious benefit, though not with entire success. The ointment was rubbed in along the whole tract of the spine. More recently Dr. Carter has employed this remedy in five cases of epilepsy, with unequivocal advantage. Besides the foregoing remedies, a great many others have been employed and recommended in this affection: such as artemisia vulgaris (Burdock;) *veraeium album*, (Stark Greding,) *mistletoe* (Boerhaave, De Haen, Hufeland;) the root of *white lilly* (Hufeland;) *philandrium aquaticum; radix mea* (jahn) *sedum acre* (Zachorn;) fol aurantiorum (Van Sweiten, De Haen, Stoerk; the *carbonate of potash* in large doses. (Hufeland's Journal.)

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* ℞ Pulv. Zingiberis.
Pulv. fol. Solivæ.
Pulv. sem. sinapi aa ℥ss.
Dose a tea spoonful, three times daily, for a child five years old.

[Few diseases are more unmanageable than the epilepsy of infants and young children. And while I have nothing new to suggest, it is proper to fix attention more particularly on worms, as a cause of this disease. A case has been reported in one of the journals, of epilepsy of several years' standing, yielding at length to the persistent use of spirits of turpentine, and other anthelmintics. In a few days, the child voided 510 lumbricoid worms, and the epilepsy ceased.

Favourable mention has been made in a German periodical, of the success of indigo in this disease; and more recently, much has been said of the powers of the common house-leek, the juice of which was taken in table-spoonful doses, three or four times a day. I know nothing of either of these remedies, from my own experience; and name them here, for the information of physicians who may have obstinate cases to manage.

It is proper also to say, that chloroform has been administered, with very happy results, to children just about to be seized, during the presence of premonitory symptoms. The fits have been thus suspended and postponed, but we are not aware that any case of recovery has been reported.]

CHAPTER XLI.

CARPO-PEDAL SPASMS.

This affection was, I believe, first distinctly noticed by Dr. John Clark of Dublin, in his Commentaries. About sixteen years ago, an interesting paper was published by Dr. Kellie on this subject;* and at a subsequent period, Dr. James Johnson published some observations on the disease, of a very interesting character.† The most satisfactory account of this remarkable form of convulsive disease, that has as yet been given to the public, is to be found in the treatise of Dr. North. Dr. James Johnson denominated this affection *carpo-pedal spasm;* others have designated it as a form of *cerebral spasmodic croup;* and Dr. North has treated of it under the head:—*A spasmodic affection of the chest and larynx in young children, accompanied by general or partial convulsions.* The following are the phenomena and general course of this affection, as detailed by Dr. North, and in the interesting paper on this subject published by Dr. Kellie.

The disease generally occurs between the third and seventh month of age. It usually makes its approaches in a very gradual manner. At first, the symptoms are often so slight, as scarcely to attract the attention of the persons about the infant. Among the earliest symptoms of the approach of the disease is a very peculiar hurried breathing, accompanied "by that kind of noise which an increased secretion of mucus in the air passages would produce," occurring at the moment the child wakes from sleep. Frequently the child awakens, as in a fright, and is immediately affected with this agitated respiration, and rattling in the trachea. "If the little patient has previously enjoyed a good state of health, the characteristic rotundity of feature observable in infants, quickly undergoes a remarkable change; the countenance becomes anxious, the sides of the nose are drawn in, the face is pallid and emaciated, the child frowns almost constantly, and *when put to the breast, it sucks greedily for a moment, but suddenly ceases to do so, throwing back the head with violence.*" The bowels always become constipated in the progress of the disease. These symptoms may recur, with more or less frequency, for a very considerable time, before any remarkable change takes place, indicative of a further development of the affection. "A convulsive motion of the hand is usually the next morbid sign which excites attention. The child's thumbs will be found constantly and firmly pressed upon the palm of the hand; the wrists and ankle-joints are bent rigidly inwards; the head is often thrown backwards, by which the anterior muscles of the neck are kept painfully upon the stretch. The inconvenience at the moment of waking is not now a mere acceleration of breathing. This symptom still continues in an aggravated degree—but the noise accompanying the respiration has gradually assumed a very different character from that which at first marked it. Each inspiration is now attended by *a loud crouping noise*, which may be heard in an adjoining apartment; the chest and larynx appear to be painfully constricted; the heart palpitates violently; the child sobs, but never cries in its natural manner, during these paroxysms of suffering. So great is the difficulty of breathing, that it sometimes appears to be almost totally suspended for a few seconds. The countenance is then pale, as in syncope. Sometimes, though rarely, the face is dark, and the vessels of the head and neck turgid, as in apoplexy. As the disease advances, the little patient experiences more or less frequent attacks of general convulsions, during which the features are much distorted; and the whole body is occasionally implicated in the convulsive movements. In a child, in whom the convulsions were very frequent and severe, the state of opisthotonos was so complete, that for many days the head and heels were the only parts which touched the bed; and if, with difficulty, this apparently painful position was altered by the mother, it was quickly resumed. In the majority of cases, no sustained febrile action is to be detected, nor is there usually any indication of particular determination of blood to the head."* Sometimes, the locked state of the thumbs, rigidly bent position of the hand and foot, and stridulous or croupy respiration, will continue several weeks with scarcely any intermission, though irregular intervals of remission and exacerbation are always more or less conspicuously noticed. "The child sometimes appears lively for a short period, and the countenance may be animated by a momentary gleam of cheerfulness; but it almost invariably awakens from its slumbers, however tranquil they may sometimes appear, with a convulsive paroxysm similar to that described above." After the termination of a paroxysm, the child appears to be greatly exhausted, and with scarcely the power of voluntary motion for some time. Dr. Kellie's description of this affection is somewhat different from the one just given from Dr. North's work; but in the main and characteristic phenomena, they coincide sufficiently to enable any one to refer it to one and the same form of infantile disease. "On the anconal aspect of the metacarpus of the hand," says Dr. Kellie, "and on the rotular aspect of the metatarsus of the foot, a remarkable tumor occurs, having a considerable degree of roundness and elevation, resembling that sort of swelling which might arise on the same parts from a blow or contusion. It seems to arise suddenly, and when first observed, it has somewhat of a mottled, livid and purplish color, resembling the chilled hand of a full and healthy child after exposure to a cold and frosty atmosphere. It has no inflammatory heat, and does not appear to be morbidly sensible, or to give any pain to the child when handled; nor does it pit on pressure, but rather gives the sensation of firmness and resistance. When an attempt is made to move it sideways, under the skin, it conveys the notion of a disease peculiar to infants, known by the name of *skin-bound.* These tumors terminate abruptly at the carpus and tarsus, so that in lusty children it seems in these places, as if confined by a cord or bandage. They sometimes continue for two or three weeks; occasionally, they disappear in a few days; and in other instances, they disappear and re-appear at short intervals. The tumor sometimes becomes leucophlegmatic, loose, with considerable œdema spreading upwards on the legs. This however never occurs unless the swelling continues for several weeks without abatement; but its more sudden disappearance without undergoing these changes, or without passing into a state of leucophlegmasia, is by far more common. This swelling on the tops of the hands and feet is connected in a great proportion of cases with *a spastic contraction of the flexor muscles* of the thumbs in the upper, and the toes in the lower extremities. The thumb becomes rigidly contracted, and permanently bent downwards and laid flat upon the palm of the hand; and in like manner, the toes are bent down to the plantar aspect of the foot. Along with the thumb, the carpus is also in some cases drawn inwards by a spastic contraction of its flexors."*

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* Edinburgh Med. Journal, Vol. 12.

† Med. Chir. Journal, Vol. 3, 1817.

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*North. loc. citat. p. 259.

In Dr. James Johnson's case,† the child, (nineteen months old) was seized three or four times in the hour, "with spasmodic affections of the respiratory muscles, consisting of repeated attempts to fill the chest, during which, she threw herself back, as in opisthotonos, and appeared as though she would be suffocated. These fits would last ten or twelve minutes, after which the child was somewhat easier, but always fretful and peevish. The backs of the hands and insteps were swollen and hard; the thumbs rigidly contracted, and locked across the palms of the hands; the toes were bent down towards the soles of the feet; and both wrists and ankles were firmly bent by the contraction of the flexor muscles. The bowels were torpid; the stools clayed or slimy, and offensive; and the child was extremely irritable, both by day and by night." During the preceding summer, I met with an instance of this affection, in a child about nine months old, in other respects of a remarkably vigorous and robust state of health. The symptoms of this case coincided so closely with those mentioned in Dr. Johnson's case, that his description applies in every point to its phenomena and course.

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* Dr. Kellie. loc. citat.

† Med. Chir. Jour. May 1817. pp. 448, 449.

It does not appear that this singular affection is attended with much danger, when timely aid is afforded with proper remedial means. Dr. North had seen but one fatal instance of this malady; and Dr. Johnson states, that in his own practice no instance of death has occurred from it. The case which came under my own observation, terminated favorably, after the process of primary dentition was completed. It should nevertheless be regarded as a disease of an unfavorable tendency; for it cannot be doubted that the cerebral irritation which gives rise to its characteristic phenomena, may, under certain states of predisposition, and in co-operation with other causes, tending to encephalic disease, readily pass into a state of vascular irritation, or sub-inflammatory action in the brain or its meninges; and thus ultimately give rise to fatal effusion, or lesion in the brain, or its spinal prolongation.

In the only dissection which is reported by Dr. North, the traces of cerebral disorder were sufficiently conspicuous. The vessels of the brain were very turgid; a small portion of blood was effused under the dura mater in several parts; a small quantity of serum was found in the ventricles; and the whole mass of the cerebrum was unusually firm, while the cerebellum was softer than common. The thorax was not examined. Dr. North ascribes the inordinate determination to the head, and the evidences of encephalic disorder, presented on dissection, in this case, to an accidental and overwhelming "rush of blood to the head, caused by a very passionate fit of crying," just before the occurrence of the last and fatal paroxysm. He thinks the characteristic phenomena of the disease are entirely independent of *cerebral* derangement, and that "in the majority of cases, there is no evidence of affection of the brain," and that we have no right to assume that certain individual symptoms—such as the crouping noise or bent thumb, must *necessarily* be followed by affections of the brain.

From a general view of the phenomena of the malady, it appears to me, nevertheless, highly probable, that the disease is *ab initio* and essentially connected with nervous irritation of the sensorium, propagated at last in very violent cases to the spinal cord. The frowning aspect of the countenance—the starting from sleep—the peevish and fretful temper—the occasional flushing of one cheek mentioned by Kellie, the costiveness and hepatic torpor, &c., all seem to indicate a state of nervous irritation or erethism of the brain; and the opisthotonic spasms, which are wont to supervene in aggravated cases, point very directly to irritation of the spinal cord.

Whatever may be thought, as to the proximate cause of this affection, all writers on this subject agree in ascribing its origin to dental irritation. It seems to be much more apt to occur in children of a robust and full habit of body, than in such as are of an opposite constitution. So far as I have been able to ascertain, the disease has never been observed to occur except during the actual progress of primary detention; and where it does not terminate fatally, at an earlier period, it always subsides soon after the completion of this process.

Treatment. This affection, as has already been observed, is almost always intimately connected with difficult and powerful dentition. In all instances the gums should be promptly examined, and if they exhibit a swollen or expanded appearance, they should be, at once, freely divided down to the advancing tooth. "I have known" says Mr. North, "the croaking respiration and spasms of the hand and feet instantly subside upon freely lancing the gums." Care should be taken, in performing this operation, that the gum be perfectly divided down to the tooth, for unless the firm membrane which is spread over the crown of the advancing tooth, be completely divided, little or no benefit can result from the operation. A simple incision will be sufficient for the incisors and canines, but "we should always make a crucial incision, when it is our object to liberate the molares."

Purgatives are, in general, indispensable in this affection. In nearly all instances, the bowels are either constipated, or disordered in such a way, as to require the use of purgatives. The milder articles of this kind are "rarely if ever to be depended on." It is necessary to procure active purgation; and for this purpose, calomel and jalap, or calomel succeeded by infusion of senna and manna, are in general to be preferred. In many instances the alvine evacuations are of a whitish or clay color, manifesting a deficiency of the biliary secretion. In such cases small doses of calomel in union with ipecacuanha will be very useful. They should be given three or four times daily, with an occasional dose of castor oil, or senna infusion, until the stools become conspicuously mixed with bile. In robust and plethoric infants, it will, often, be highly useful to abstract blood, either from a vein with the lancet, or by leeching from the head. Where the determination of blood to the brain is very strong, North advises opening a jugular vein, or cupping upon the temples. I have, in a few instances, derived great benefit from the application of blisters behind the ears, or on the back of the neck. They cannot, however, be used, with propriety, where the pulse is active, or where depletion is indicated. In cases attended with a small and frequent pulse, and great irritability of the system, small doses of Dover's powder, or of the extract of hyoscyamus, will generally procure very considerable relief. Great care, however, is necessary in the employment of narcotics in this affection. Where the face is often flushed, and the pulse tense or corded, or where the habit is manifestly febrile, they can seldom be used without considerable risk of injury. It is only after the gums have been lanced—the bowels freely purged, and the patient is free from febrile irritation, with more of nervous than vascular irritation, that remedies of this kind can be used with a prospect of benefit· and under circumstances of this kind they often operate beneficially. Mr. North states, that in some cases "where the convulsive breathing and violent action of the diaphragm were very great, frictions upon the chest with a liniment composed of laudanum, spirits of camphor, and soap liniment, three or four times a day has afforded much relief." I have used frictions along the spine, with a mixture of two parts of laudanum and one of the essential oil of amber, with great benefit, in this complaint. The frictions should be repeated three or four times daily. Rubefacient applications, also, along the spinal region, may afford some relief; and it is not impropable that cupping over the spine would prove advantageous. In the early stages of the disease, the warm pediluvium, repeated two or three times daily, is capable of affording very considerable benefit. In a case I attended some time ago, the child was invariably much relieved by placing its inferior extremities in warm water. The bath was repeated every three or four hours, under the employment of which. in conjunction with the use of purgatives, blisters behind the ears, and lancing the gums, the disease gradually subsided, and the infant is now perfectly healthy.

Cold applications to the head, while the feet are placed in warm water, seldom fail, promptly to mitigate the paroxysms of spasmodic respiration. No advantage can be derived during these paroxysms, from stimulating anti-spasmodics, such as asafœtida, ether, camphor, &c. Indeed, articles of this kind, at any period of the disease, are generally decidedly injurious.

If the child has been weaned, nothing but the blandest and simplest nourishment must be allowed. All stimulating articles of diet and drink must be carefully avoided. If the weather is fine, exercise, by gestation in the open air, will contribute to moderate themorbid irritability of the system.

CHAPTER XLII.

CHRONIC ERUPTIVE AFFECTIONS.

This very disagreeable eruptive disease, is, I believe, altogether confined to infancy, and is evidently intimately associated with dentition, since it very rarely occurs either before the commencement of this process, or after it is entirely completed. The appearance of this eruption varies considerably, according to the degree of inflammation, and the greater or less thickness of the scabs. In some instances a number of small pustules are scattered over the scalp, forehead, temples, and cheeks, which in a few days break and form thin and moist crusts. This mild form of the disease is almost entirely confined to very young infants. In the majority of cases, the eruption commences on the cheeks or near the centre of the forehead, in the form of small whitish pustules, grouped in clusters on an irritated and bright red surface. These soon break, and a viscous, yellow fluid is effused, which concretes into thin, soft crusts of a yellowish green colour. These crusts gradually increase in thickness and extent, and a thin viscid fluid oozes from beneath them of an offensive and acrid character. Very frequently the whole face, with the exception of the nose and eye-lids, are covered with an almost continuous crust, the child appearing as if it had a mask on its face. When the first scabs fall off, the surface which they expose appears highly inflamed, with a vast number of minute excoriations, from which a sero purulent fluid issues, which soon concretes into a fresh crust. Sometimes large pustules come out behind the ears, around the mouth, and on the chin, which speedily give rise to a thick greenish yellow crust on those parts. "Under some circumstances, the mouth is surrounded with large, thick, yellow incrustations, which are of a deep brown in certain spots, where a little blood has mixed with the dried fluid; in these movements the lips are much impeded: at other times these thick incrustations occur behind the ears." (Cazenave.) This eruption occurs not only on the scalp, forehead, and face, but occasionally extends also to the body and limbs. Dr. Dewees states that he has seen it "cover nearly every part of the cuticular system;" and I have met with several instances, where the eruption extended itself to the body and extremities. In some cases the disease is confined to the cheeks—in others the forehead and temples are the only parts affected; and occasionally it is seated exclusively on the hairy scalp.

There is always much itching in the parts affected; and in some instances the itching and pain are so severe and constant, as to wear down the infant, and bring on a slow irritative fever, attended with much exhaustion and emaciation.

When the disease is about disappearing, the discharge from the sores diminishes; "the crusts are formed more clearly and become thinner and whiter, the surface upon which they rest becomes less and less red; they are soon replaced by a slight desquamation, which also speedily disappears, and there only remains a light rosy tint on the spots that were the seat of the disease, and this also gradually fades away." This eruption never leaves any permanent marks or cicatrices—the skin of the affected parts acquiring its natural smoothness and color, in the course of five or six weeks after the eruption has disappeared.

The duration of this disease, is extremely variable. In some instances it disappears spontaneously in the course of four or five weeks; more frequently, however, it continues for three or four months, and often much longer. I have known several instances to continue for upwards of a year.

Crustea Lactea is not a contagious affection. Children of robust and full habits, appear to be more liable to it, than those who are in a feeble and sickly condition. Nothing, satisfactory has been ascertained, in relation to the causes of the disease. It is evident, however, that the irritation of dentition is in some way or other, intimately connected with the eruption. The constant preternatural determination of blood to the head, which is apt to take place during dentition, is propably a principal cause of the disease.

In the majority of instances, the general health remains good, during the continuance of the eruption. Occasionally the irritation and itching are so great and incessant, that the child sinks at last into a slow and wasting irritative fever. Sometimes a considerable degree of gastro-intestinal irritation supervenes, causing diarrhœa, emaciation, and exhaustion. The disease, however, is probably never fatal except when it becomes complicated with disease of some important viscera or with rapid and profuse diarrhœa. Dr. Dewees, has seen two instances of death, from this disease. In these cases, the eruption "covered nearly the whole of the body," and the children "were destroyed by the pertinacity of the fever and the profuseness of the diarrhœa." In general, however, the prognosis in this affection is quite favorable. Indeed, many infants appear to be healthier during this complaint than they were previous to its occurrence; and it seems, often, to counteract the supervention of other diseases—particularly cholera infantum, hydrocephalus and convulsions.

Contrary opinions have been expressed with regard to the propriety of remedial applications in this diagreeable affection. It is contended by some, that the eruption is the result of a salutary effort of nature, and that it can seldom be removed by artificial means, without much risk of bringing on other and vastly more dangerous affections. Others say, we may with perfect safety, in all instances, remove the disease; and that it should never be suffered to continue if we possess means capable of arresting its progress. That great and irremediable injury may result from the sudden removal of this eruption, by artificial means I have not the slightest doubt. I am confident that I have seen indomitable diarrhœa, hydrocephalus, and general emaciation and febrile irritation, brought on, by a rash and successful interference with this disease. Within the present year I witnessed two instances of the pernicious consequences of suddenly drying up the eruption. Both infants were remarkably healthy, although the forehead and cheeks were covered with a thick porriginous crust. The mothers were unwilling to permit their infants to remain in this unpleasant condition; and although earnestly cautioned against the use of the remedies they proposed, they pursued their own views, and in a short time effected a complete removal of the eruption. In six weeks afterwards, one of these children died of hydrocephalus, and the other was extremely wasted by diarrhœa and finally died from intestinal irritation and exhaustion. It cannot be questioned, indeed, that in many instances the disease may be removed by remedial applications, without the slightest ill consequences; and when the cure is effected in a gradual manner, in conjunction with proper precautionary measures, it will very rarely lead to any unfavorable results. It is against the external application of *active* remedies—remedies capable of causing a rapid desiccation and disappearance of the eruption, without suitable preparatory measures, that I would particularly object.

Treatment.—I have generally commenced the treatment with the use of small doses of calomel, in union with the golden sulphur of antimony, with an occasional laxative dose of sulphur and magnesia. A quarter of a grain of calomel, with the same quantity of golden sulphur of antimony, given three or four times daily. If this does not keep the bowels in a sufficiently loose condition, a moderate dose of lac sulphuris and magnesia (ten grains of each,) should be given, from time to time, so as to procure, at least three loose evacuations every twenty-four hours. The affected parts should be frequently fomented with tepid milk and water, or with a decoction of bran. By the employment of these remedies we may in general, moderate the irritation and itching of the affected parts very considerably, in the course of ten or twelve days. When an obvious impression is made on the disease in this way, the calomel should be less frequently administered, and the mixture of sulphur and magnesia employed daily, or every other day, so as to keep up a loose state of the bowels. Having employed these remedies for two or three weeks, we may next resort to local applications; and for this purpose, fresh citrin ointment, weakened by the addition of an equal portion of lard, has more frequently answered my intentions than any other remedy of this kind I have tried. Dr. Dewees recommends the use of calomel ointment, prepared according to the following formula.* The tar ointment also, has been much employed for this

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℞. Calom. ppt. ʒii; Cerat. Simp. ℥i; Ess. lemon gtt. xx. M.

purpose; and I have frequently used it with much advantage. Whatever application of this kind be resorted to, it ought not at once, to be applied to the whole or even an extensive portion of the porrigenous surface. A small portion, only, of the diseased part should, in the first place, be touched with the ointment. "When this becomes relieved, a second spot must be selected for its application, and so on until the whole of the diseased surface has been passed over and relieved."

The French physicians, are much in the habit of employing sulphurs, alkaline lotions, in this affection, and they are undoubtedly often very effectual. A wash made by dissolving a drachm of sulphuret of potash, and two drachms of the sub-carbonate of soda in a pint of warm water, is recommended for this purpose by Cazenene. I have used this lotion in a few instances with entire satisfaction. When the disease appears on the body and limbs, this writer advises the use of "sulphurous, alternated with tepid emollient baths."

Where there is much inflammation, and the child is of a robust and plethoric habit, considerable benefit may be derived from blood-letting, or from the application of leeches behind the ears. When the disease attacks the scalp, the hair should be cut very short, and emollient cataplasms applied over the affected parts, until the crust separates. The tar or reduced citrin ointment should then be applied, not over the whole surface at once, but in the successive manner that has just been mentioned.

When the irritation and itching are very great I have frequently known great relief obtained from the application of fresh cream to the affected parts. It will also tend much to the comfort of the child, if the acrid secretions are frequently washed off, with tepid milk and water, or a weak solution of fine soap.

Formerly the *viola tricolar* (hearts ease) was much employed as an internal remedy in this affection. About eighteen years ago, I employed this article in a very severe and obstinate case, and as it appeared to me with considerable advantage. The expressed juice of the fresh plant is given in doses varying from one to two drachms; or a decoction of the dried levaes in milk, in the proportion of an ounce of the leaves to a half pint of milk may be used. This quantity must be taken during the day.

The diet of the child must be carefully attended to. If the infant is still nourished at the breast, much benefit may sometimes be obtained by changing the milk. Where this is impracticable, it should not be permitted to suck more than two or three times in the course of twenty-four hours, whilst the deficiency of nourishment from the breast, is made up by feeding it on thin water gruel, cows' milk and water, thin arrow root, or barely water. The nurse too, ought to avoid eating salted meats, and in severe cases, should be confined almost entirely to a milk and vegetable diet. All spiritous drinks, such as wine, brandy and water, ale, beer, &c. should rigidly be avoided, on the part of the nurse. Children who are weaned, should be nourished on milk and water, arrow root, sago, oatmeal gruel, &c. Every kind of stimulating food and drink must be forbidden. Exercise in the open air, by gestation, will be useful; and the head must be kept wholly uncovered.

2. *Sore Ears. Excoriations behind the ears.*

This is a very common affection with robust and plethoric infants during dentition. It begins in the form of small pustules, which soon ulcerate; or instead of pustules, the skin becomes inflamed, and in a short time, terminates in superficial ulceration or excoriation, from which an offensive serous fluid issues. When these sores are neglected or mismanaged, they are apt to degenerate into very painful and severe ulcers, which are, in general, extremely difficult to bring to a mild and healing condition. In this aggravated state, there is almost always a very copious discharge of offensive, purulent matter, which in many instances becomes so acrid as to inflame and excoriate the parts over which it flows. The whole external ear, sometimes becomes much inflamed and swollen, and a deep ulcerous fissure is formed in the groove behind the ear.

Dr. Dewees asserts that the apprehension of dangerous consequences from drying up these sores, "is a popular prejudice, perpetuating an evil which should never have been permitted to have existed." I am not of this opinion. I conceive, and I think on very good grounds, that irreparable injury may result from the sudden drying up or healing of these sores, particularly during the active progress of dentition. The Doctor has been more fortunate than I have been, if he has never known any serious evils to result from this cause. I doubt whether any prudent physician would advise the application of drying remedies to excoriations of this kind, while the infant was under the influence of painful dentition. That these sores may be improved and gradually healed by a cautious and judicious course of management, without any unpleasant consequences, I freely admit. I have never suffered this affection to continue without making efforts to moderate its severity and to bring it by degrees, to a healing condition. The positive declaration, however, that the notion that such sores are not to be hastily dried up, is a vulgar or "popular prejudice," is certainly not warranted by the experience of many of the most eminent practitioners that have expressed their opinions on this subject.

In the majority of instances, more or less torpor of the bowels is connected with the appearance of these sores. Whether this be the case or not, however, purgatives are always indispensable in the management of the complaint, not only with the view of moderating the inflammation and promoting the cure of the sores, but as means calculated to obviate the unfavorable effects that might arise from the drying up or healing of the disease. Very active purging, however, is neither necessary nor proper, at least not after the bowels have in the first place, been freely evacuated. It will be sufficient to procure three or four free evacuations in the course of a day. For this purpose, I have generally administered a grain of calomel in the evening, with a small dose of magnesia and sulphur, or of castor oil on the following morning. If the gums are inflamed or swollen, from dentition, they should be divided by a free incision down to the advancing teeth. The use of warm pediluvium, may also be beneficial by its tendency to counteract the preternatural determination of blood to the head, which usually attends such cases. The sores should be kept as clean as possible, by washing them repeatedly with tepid milk and water, or warm water with a small portion of fine soap dissolved in it. This is of much importance; for if the acrid and offensive discharge is suffered to remain, and spread itself over the surrounding parts, it never fails to increase the pain and inflammation, and enlarge the extent of the ulcer or excoriation. It is indeed always extremely difficult, if not impossible, to improve the condition of the sore, whatever means may be employed, unless the strictest attention be paid to keeping the affected parts clean. In cases attended with severe ulceration and inflammation, much relief may be obtained from the application of soft emolient poultices, renewed every four or five hours, until the pain and inflammation are moderated. Fomentations with a decoction of white poppy heads, generally afford great relief where there is much irritation and itching in the parts. I have also employed a weak solution of the sulphate of morphia, in the proportion of a grain to two ounces of water, for this purpose, with the happiest effect. After having continued this course of management for nine or ten days, or until the inflammation and itching are moderated, we may have recourse to applications of a more active character. I have been in the habit of using the *unguent. zinci. oxidi*, for this purpose, and in general with entire satisfaction. It should be spread on a slip of fine linen, and laid over the affected part, having previously washed away the offensive secretions. This ointment is particularly useful in mere excoriations behind the ears. The citrin ointment reduced by adding an equal portion of fresh lard, is also an excellent application in this affection. It should be spread thinly on a soft piece of linen and laid on the sores during the night. In the morning, the parts should be carefully washed with warm water and fine soap, and then dressed with the ungt. zinci. oxidi. Dr. Dewees strongly recommends the use of calomel ointment, "to be smeared upon the external margins of the sores, as well as upon the sound skin itself, twice daily, taking care that the parts be carefully washed before each application of the ointment, and gradually encroaching upon the sores every day, by a more extensive application of the ointment." I have used an ointment, prepared by triturating twenty grains of very finely pulverised red precipitate, with half an ounce of lard, in the way recommended by Dr. Dewees, for the calomel ointment, with peculiar advantage.

The infant's diet should be carefully regulated. If it is weaned, no animal food of any kind should be allowed. It must be confined to a milk and vegetable nourishment, such as arrow root, sago, barley, oat-meal gruel, and rice. If the child is still nourished at the breast, it should be less frequently suckled, and small portions of a mixture of cows milk and water, barley water, or very thin oat-meal gruel allowed.

3 *Strophulus Confertus*. *Tooth Rash*.—This affection is peculiar to infants at the breast, and is manifestly intimately associated with dentition. It consists in an eruption of papulæ, "seated chiefly on the cheeks and forehead, when they occur about the fourth or fifth month, and are smaller, more crowded together, and less vivid in their color than in the affection called *red gum*," to which in other respects it bears a close resemblance. When they occur in children at a more advanced age—that is, about the seventh or eighth month, which is by no means uncommon, they appear in large irregular patches on the outside of the hands, arms, and shoulders, and are hard and close set, so as to give to the whole surface a high red color." These papulæ, never assume a chronic character. They usually continue about twelve or fourteen days, when they begin to fade and desiccate, and gradually disappear. In some instances, though rarely, this variety of strophulus appears on the the legs, extending in a short time to the loins and naval, imparting a uniform redness to the cuticle, "which cracks and separates, in large pieces, occasioning much distress to the child." This affection is but very seldom attended with constitutional disturbance, unless it assumes the severe form, that has just been mentioned. Not unfrequently it is attended with very troublesome itching, by which the infant is sometimes much disturbed during night. In the majority of instances, however, no particular inconvenience attends the eruption; and children often appear perfectly healthy during its continuance.

If the gums are swollen and inflamed, from dentition, they should be freely lanced. The bowels should be kept in a loose condition by magnesia or castor oil, with an occasional small dose of calomel in the evening. The affected parts should be kept clean by repeated ablutions with tepid milk and water; and after each washing, a little flour or fine hair powder should be dusted upon them. Every thing capable of irritating the skin, such as flannel or muslin should be removed from the diseased parts.

4 *Strophulus Intertinctus. Red Gum.*—This variety of strophulus seldom occurs after the sixth week of infancy, and consists in papulæ of a vivid red color, appearing "most commonly on the cheeks, fore arms, and back of the hands." In many instances, however, the eruption is universally diffused over the whole surface giving it a uniform bright red color, not unlike the rash of measles. The papulæ are generally distinctly separated from each other, and "are intermixed with minute red dots or stigmata, and often with large red patches, which have no elevation."

This eruption appears to be intimately connected with a deranged state of the alimentary canal; for in most instances, sickness of the stomach, with griping and diarrhœa, precede the appearance of the rash. A debilitated state of the digestive organs from errors in diet, giving rise to acid, and other irritating causes in the stomach and bowels, appears to be the ordinary source of this affection. Its occurrence is doubtless much favored, by keeping the infant too warm,—an error which is but too frequently committed by nurses and mothers. In its ordinary and mild form, this eruption is rarely attended with any manifestations of general indisposition. The bowels, indeed, are frequently more or less disordered, but this does not often create any obvious illness or general disturbance.

This disease does not often require any active medical treatment. Ablutions with warm water, and the occasional use of the tepid or warm bath, so as to keep the skin free from sordes, and promote the regular action of the cutaneous exhalents, may be resorted to with advantage.

Mild aperients, also, are useful. Small doses of magnesia and rhubarb, should be given to keep up a moderate looseness of the bowels. The following combination has appeared to me peculiarly useful for this purpose.* If the child is affected with colic pains or griping a drop of laudanum or four or five drops of tinct.opii camphorata should be given after the operation of the laxative. "The cold bath or even exposure to a stream of cold air should be avoided" during the continuance of the eruption; for if in consequence of want of caution in this respect, the rash is repelled, very alarming effects will be apt to ensue. Oppressed breathing, drowsiness and stupor, severe colic pains, rapid and exhausting diarrhœa, and convulsive affections, may arise, in consequence of the sudden retrocession of the eruption. When this occurs the infant should be immediately put into a warm bath, and some wine whey, or a few drops of the compound spirit of ammonia administered. It should be kept in the bath until the skin has acquired warmth; and when removed, it must be well dried, and wrapped up in warm flannel. Sage, marjoram, or catnip tea, may be given with advantage in this condition; and where the symptoms are severe and obstinate, a blister laid between the shoulders, may afford great benefit.

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* ℞. Magnes. Calc. gr.iv; P. Rhœi gr.ii; Pulv. rad. valer. gr.ii. M. To be given at once.

5. *Strophulus Volaticus.*—This is by no means a common complaint. It consists in small circular patches of papulæ, appearing and disappearing successively on different parts of the body. There are seldom more than ten or twelve papulæ in one cluster; and " both the papulæ and the interstices between them are of a vivid red color." The eruption is generally attended with considerable heat and itching, and in most cases, a slight degree of febrile irritation occurs. About the fourth day these patches begin to turn brown, and soon exfoliate; so that "the whole series terminates in three or four weeks. In some instances, not more than three or four clusters of papulæ make their appearance, and these are usually situated on the fore arms and cheeks. Inmany cases, however, as one patch declines, another makes it appearance "at a small distance from it, and in this manner the complaint gradually spreads over the face, body, and limbs."

The pulse is generally accelerated, the tongue covered with a white fur, the skin very warm and not disposed to perspire, while the little patient is sometimes unusually restless and uneasy. This eruption seldom occurs during the first nine months after birth. Dr. Dewees observes, that "it has always, according to his observations, appeared later than is usually described, or not until the child was about cutting the first jaw teeth." This accords entirely with my own experience. I have never witnessed this eruption before the ninth or tenth month, and most commonly about the period mentioned by Dr. D. This affection would seem to be intimately connected with a disordered state of the stomach and bowels; for in most instances, the evacuations are either very unnatural, or the child is manifestly troubled with acidity, flatulency, and griping stools.

The diet should be of the simplest and most unirritating kind, more especially, when the eruption is attended with febrile irritation. Milk, arrow root, sago, grated crackers dissolved in warm water, oat-meal gruel, and rice, form appropriate articles of nourishment in this affection. Gentle purgatives will be useful throughout the whole course of the complaint. Very small doses of calomel in the evening, with a moderate dose of magnesia or castor oil on the following morning, will answer very well for this purpose. The affected parts should be frequently washed with warm milk and water; and when the eruption is severe and obstinate, the application of reduced citrin ointment, or calomel ointment, as directed for crusted lactea, should be resorted to. When the bowels become much affected with griping and diarrhœa, minute portions of calomel in union with ipecacuanna, should be administered three or four times during the day, with an occasional dose of castor oil, and a few drops of laudanum in the evening. The warm bath also, is very useful in such cases. When the eruption is about drying up, and the bowels have been properly evacuated, mild chalybeate preparations may be employed with considerable benefit. Bateman recommends a watery solution of the tartrite of iron for this purpose, "as particularly adapted from its tasteless quality to the palates of children and possessed of more efficacy than vinum ferri."

[The chronic eruptive affections of young and older subjects, often yield to Fowler's solution of arsenic, after all other means have failed. A drop may be given three times a day to a child a year old, for the space of a week or ten days. Omit the medicine for three or four days, and then employ it as before. By persisting in this plan a few weeks, the disease will often vanish. If the scrofulous diathesis complicate the case, resort must be had to iodine.]

CHAPTER XLIII.

INFLAMMATION AND ABSCESS WITHIN THE EAR.

INFANTS are sometimes affected with inflammation, terminating often in abscess within the ear, which as they can give no distinct account of their sensations, is apt to be mistaken for some other painful affection, and is consequently often either entirely neglected or mismanaged. Children affected in this way are, at times, extremely restless, leaning the head to one side, or moving it from side to side, with frequent spells of vehement and unappeasable crying, and a countenance expressive of great suffering. At night the child is apt to awake and cry violently for some time, after which it sinks into a sound and quiet sleep, "from which it will, probably, be roused by renewed torture." There is seldom any distinct febrile irritation connected with this painful affection; and it is on this account, probably, that these distressing pains, were formerly generally regarded as of a spasmodic character. This affection may be distinguished from colic, for which it is frequently mistaken, by the paroxysms of suffering being free from the agitation and retraction of the inferior extremities, so constantly observed in severe abdominal pains. The hands and feet too are warm, which is seldom the case in colic. Dr. Dewees observes, "that we have always reason to suspect this pain to arise from an abscess forming in the ear, when the child throws its head backwards and forward, and indeed in all directions during the paroxysm of pain." One of the most certain indications, however of this affection, is obtained by pressing with the point of a finger, "against the lower portion of the external meatus." If the child shrinks and cries when pressure is thus made and the symptoms already mentioned are present, there can be little if any doubt, that an abscess is forming in the ear. Children affected in this way, seldom rest easy, when lying on the affected side. In some instances, after the abscess has made considerable progress, it may be seen by looking into the ear.

There can be no doubt however, that extremely violent pains within the ears, often occur, without either inflammation or abscess. We frequently meet with cases, which come on suddenly, and after having continued for some time, with occasional intermissions, as suddenly disappear, without any further inconvenience. The pain in cases of this kind is usually extremely intense, and may in general be speedily relieved by dropping some laudanum into the ear, or taking a full dose internally, and placing the feet in warm water. When the pain depends on inflammation or abscess, laudanum procures but slight and temporary relief.

When the formation of the abscess is not prevented by prompt and appropriate remedies, it continues to torture the little patient, until it bursts and the mattter issues from the ear. When this occurs, all the pains suddenly subside, and the child becomes perfectly easy. Occasionally, however, when the first abscess has discharged its contents, a second one commences and passes through the same painful course, and thus a third and even a fourth abscess may occur and protract the sufferings of the child, with occasional intermissions, for several months. In some instances serious and irremediable injury is done to the organ of hearing. "The small bones of the ear become detached by suppuration, and are discharged with the pus which constantly flows from the external orifice of the organ." The pus in these cases generally acquires an acrid, thin, and extremely offensive character, inflaming and excoriating the external parts with which it comes in contact. Fortunately, however, these severe and distressing cases are by no means common. In a great majority of instances the abscess heals without much difficulty, and leaves the ear in a perfectly healthy condition. Not unfrequently the posterior part of the meatus becomes excoriated, or affected with chronic superficial ulceration, without any serious injury to the organ of hearing; and these cases are attended with a thin seropurulent discharge from the ear, which often continues for several years. These chronic discharges from the ear, are almost always attended with dullness of hearing, and in some instances this organ never regains its original acuteness.

When there is reason to believe that the sufferings of the child arise from inflammation and the formation of an abscess in the ear, five or six leeches, if practicable, should be applied behind the ears or on the mastoid region. A few drops of laudanum should be instilled into the ear, and an active purgative of calomel and rhubarb administered. The application of a blister under or behind the ear, is however, in general more effectual in arresting the progress of the complaint than any other means we possess. By the prompt employment of these remedies, when applied before suppuration has commenced, we may in general, remove the complaint without much difficulty; "but unfortunately the time for useful exertion is almost always lost, by a trial of temporizing applications, and we have but too often the mortification to witness only the discharge from the ear."

When the disease has advanced to this stage, we must endeavor to promote the healing of the abscess, and to prevent it from degenerating into a chronic discharging ulcer. For this purpose, it is of great importance to keep the affected parts as clean as possible, by repeatedly throwing warm milk and water into the ear with a small syringe. If, after these mild injections have been used for several days, the discharge from the ear continues, a weak infusion of peruvian bark, or warm water mixed with tincture of myrrh, (in the proportion of twenty drops of the latter, to half an ounce of the former) should be thrown into the canal three or four times daily, immediately after the secretions have been washed away with the milk and water injections. Dr. Dewees recommends, for this purpose, a mixture of lime water and milk, with a small portion of the tincture of myrrh.* "This mixture should be prepared only as it is wanted, and thrown into the ear four or five times a day." In cases of an obstinate character, where there is a constant discharge o offensive matter from the ear, without any particular pain or uneasiness from the affection, a weak solution of the *nitrate of*

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* Lime water and milk, of each two tea spoonfuls; tincture of myrrh, twenty drops. Mix.

silver, as recommended by Curtis, is frequently very beneficial In four or five instances of this kind I have employed this solution with complete success. Four grains to an ounce of water forms a solution of proper strength for this purpose. In obstinate chronic purulent discharges from the ears, Buchanan asserts that he has used a weak mixture of pyroligneous acid, as an injection, "and found it to surpass his most sanguine expectations, in diminishing the discharge, and almost immediately restoring the hearing." He states that he has made repeated trials of this injection, and almost uniformly with entire success. "I may venture to say," he continues, "that a more valuable medicine than pyroligneous acid, has not been introduced into acoustic surgery either in this or the last century." It may be used in children according to the following formula:

℞ acid. pyrolign. ʒi.
Aq. distillat. ℥vi.
Ft. injectio.

The mode of using it, is first to wash out the meatus, with tepid water, and then to inject the mixture "so as to be directly applied to the abraed or ulcerated surface."

The insertion of an issue in the arm, or on the back of the neck, has been known to arrest the progress of this affection; and Dr. Dewees "thinks he has seen some advantage derived from the little patient wearing a burgundy pitch plaster under the affected ear."

The child should be made to lie on the affected side, when in bed, in order to prevent an accumulation of the offensive matter in the bottom of the meatus.

A TABLE

EXHIBITING THE DOSES OF MEDICINES,

ACCORDING TO DIFFERENT AGES.

	Adult Age.	From 4 to 7 years.	From 3 to 1 years.	
Aloes, soccotrine	10 to 15	5 to 3	2 to ½	grains.
Antimonial Wine	ʒij to ʒss	ʒj to ʒij	20 dr.– 40	
Antimonial powder	6 gr. – 8	2 gr.– 4	½ gr.– 1	grains.
Ammonia Carbonate, salt of hartshorn	6 gr. – 12	4 gr.– 2	½ gr.– 1	grains.
Aqua Ammonia, spirit of hartshorn	10 dr. – 20	5 dr.– 10	1 dr.– 2	drops.
Assafœtida gum	10 gr. – 20	5 gr.– 10	3 gr.– 1	grains.
Calomel	10 gr. – 20	5 gr.– 10	4 gr.– 2	grains.
Camphor	6 gr. – 10	2 gr.– 4	1 gr.– ¼	grains.
Charcoal powder	℈j to ℥j	10 gr.– 20	10 gr.– 4	grains.
Cream of tartar	℥j to ʒss	℈j to ℥ss	℈j to 10 gr.	
Carbonate of Magnesia	ʒj to ℥ij	℈j to ℥j	℈j to 10 gr.	
Carbonate of potass	10 gr. – 30 gr.	5 gr.– 10	5 gr.– 2	grains.
Carolina pink-root, powdered root	℥j – ʒij	℈j – ℈ij	20 gr.– 10	gr.
Carolina pink-root, infusion ʒss to one pint of water	ʒiv to ʒviii	fl	ʒij – ʒss	fl.
Castor oil	ʒj to ℥jss	ʒss – ℥j	ʒij – ℥j	fl.
Chalk, prepared	℈j to ℈ij	10 gr.– 20	6 gr.– 3	gr.
Croton oil	1 g$^{tt.}$ to 2 g$^{tt.}$	1 g$^{tt.}$ – ½	¼ g$^{tt.}$ – $\frac{1}{10}$	drop.
Dandelion Extract	℥j – ʒij	℈j to ℥j	℈j to ℈ss	
Colomba root, powder	10 gr. – 30 gr.	5 gr.– 10	3 gr.– 1	gr.
Colocynth, compound extract of	10 gr. – 20	6 gr.– 10	5 gr.– 2	gr.
Corrosive Sublimate, as an alterative	⅛ gr. – $\frac{1}{16}$	$\frac{1}{20}$ – $\frac{1}{12}$	$\frac{1}{20}$ – $\frac{1}{30}$	gr.
Dewberry root, decoction, ʒj to one pint of water	ʒij – ʒiv	ʒj – ʒjj	ʒj to ʒij	fl.
Dovers powder	8 gr. – 12	4 gr.– 6	3 gr.– j	gr.
Elixir of Vitriol	10 g$^{tt.}$ – 30 g$^{tt.}$	6 g$^{tt.}$ – 15 g$^{tt.}$	5 g$^{tt.}$ – 3 g$^{tt.}$	drops.
Emetic tartar, repeated doses	2 gr. – 3 gr.	½ gr.– 1 gr.	½ gr.- ⅛	grain.
Epsom salts	ʒj to ʒjss	ʒij – ʒss	ʒj – ℈j	
Essence of peppermint	20 g$^{tt.}$ – 30 g$^{tt.}$	5 g$^{tt.}$ – 10	3 g$^{tt.}$ – 1 g$^{tt.}$	drops.
Ether sulphuric	20 g$^{tt.}$ – 30 g$^{tt.}$	5 g$^{tt.}$ – 10	4 g$^{tt.}$ – 2	drops.

A TABLE OF DOSES OF MEDICINES.

•	Adult Age.	From 4 to 7 years.	From 3 to 1 years.	
Extract of butternut, laxative	20 gr. - 30 gr.	6 gr.- 15	5 gr.- 2	grains.
——— of Belladonna	$\frac{1}{2}$ to j gr.	$\frac{1}{8}$ to $\frac{1}{2}$	$\frac{1}{8}$ - $\frac{1}{20}$	grains.
——— Hyoscyamus, henbane	2 to 10 gr.	$\frac{1}{2}$ - 1 gr.	$\frac{1}{4}$ - $\frac{1}{8}$	grain.
——— of Gentian.........	6 to 10 gr.	1 gr.- 5	2 gr.- $\frac{1}{4}$	gr.
Foxglove, digitalis, powder ..	1 to 4 gr.	$\frac{1}{3}$ to $\frac{1}{2}$	$\frac{1}{4}$ - $\frac{1}{10}$	gr.
Gamboge—cathartic........	1 to 4 gr.	$\frac{1}{4}$ - $\frac{1}{2}$	$\frac{1}{4}$ - $\frac{1}{10}$	gr.
Geranium root, Cranesbill root, decoction, ʒj to one pint of milk or water	ʒij - ʒiv	ʒj - ʒij	ʒss - ℥ij	fl.
Glauber Salts	ʒj - ʒjss	℥ij - ʒss	℥j - ℥ss	
Hartshorn Salt	6 gr. - 12 gr.	4 - 2 gr.	$\frac{1}{2}$ - j	gr.
Hive Syrup, as an emetic ...	....	....	30 gtt.- 10	drops.
Hoffman's Anodyne	30 - 40 dr.	10 -15 dr.	8 - 3	drops.
Huxham's tincture of bark ..	℥j - ℥ij	ʒss - ℥j	15 dr.- 5	fl.
Iron filings, tonic	10 - 20 gr.	5 -10 gr.	3 - 1	grains
Iron, Muriated tincture of...	10 gtt - 20	5 -10 gtt.	4 - 2	drops.
Iron, Phosphate of..........	20 - 40	5 - 10	3 - 2	grains
Iron, Prussiate of	10 - 15	4 - 8	3 - 1	gr.
Iron, Tartrate of...........	ʒss - ℥j	10 gr.- 20	6 gr.- 2	grains.
Iron sulphate..............	$\frac{1}{2}$ - 2 gr.	$\frac{1}{6}$ - $\frac{1}{2}$	$\frac{1}{8}$ - $\frac{1}{12}$	
Iodine, tincture of— ℥j to ʒj of alcohol	10 gtt. - 15	3 - 5 gtt.	2 - $\frac{1}{2}$	drop.
Ipecacuanha powder........	℈j - ℥ss	8 gr.- 12	5 - 3	gr.
Jalap powder..............	℈j - ℥ss	8 gr.- 12	6 gr.- 2	gr.
Kino, gum powdered	10 - 20 gr.	4 gr.- 6	2 - 1	grains.
Lactucarium—lettuce opium	2 - 4 gr.	$\frac{1}{3}$ - 1 gr.	$\frac{1}{4}$ - $\frac{1}{16}$	grains.
Laudanum, tincture of opium	20 gtt. - 40	5 -10 gtt.	5 gtt.- 2	drops.
Lime water................	ʒj - ʒiv	ʒj - ℥ij	℥j - ℥ss	fl.
Magnesia, calcined.........	℥j - ℥ij	℈j - ʒj	℈j -10 gr.	
———, carbonate........	℥j - ℥ij	℈j - ʒj	℈j -10 gr.	
Manna	ʒj - ʒiv	℥ij - ʒss	ʒj - ℈j	
Milk of sulphur	℥ij - ℥iij	℥j - ʒij	ʒss - ℈j	
Morphia..................	$\frac{1}{4}$ gr.	$\frac{1}{24}$ - $\frac{1}{16}$	$\frac{1}{30}$ - $\frac{1}{40}$	gr.
———, sulphate of—the same dose as morphia.				
Nitre—Salt-petre	10 gr. - 30	4 - 6 gr.	3 - 2	grains.
Oil of Peppermint	10 gtt. - 20	3 gtt.- 6	2 - 1	drops.
Oil of Juniper.............	10 gtt. - 20	3 - 6	2 - 1	drops.
Oil of Turpentine..........	20 gtt. - 100	6 - 12	5 - 3	drops.
Oil of Wormseed..........		6 gtt.- 10	5 gtt.- 2	drops.
Opium	1 gr. - 3	$\frac{1}{8}$ - $\frac{1}{3}$	$\frac{1}{10}$ - $\frac{1}{20}$	grains.
Oxyd of Zinc	2 - 6 gr.	$\frac{1}{4}$ - $\frac{1}{2}$	$\frac{1}{6}$ - $\frac{1}{10}$	

A TABLE OF DOSES OF MEDICINES.

	Adult Age.	From 4 to 7 years.	From 3 to 1 years.	
Paragoric Elixir	ʒij – ʒiij	ʒss – ʒj	ʒss – ℈j	fl.
Peruvian Bark	ʒj – ʒij	15 gr.– ʒss	15 gr.– 8	gr.
Pink-root powder	ʒj – ʒij	℈j – ℈ij	℈j – 10	grains.
Quinine	gr. j – 5	½ gr.– 1 gr.	⅓ – ¼	gr.
Rhubarb, powder	℥ss – ʒj	12 gr.– ℈j	10 gr.– 8	grains.
Snake-root, Senega, decoction, ℥j to 1 pint of water	℥j – ℥ij	ʒjss – ℥ss	ʒjss – ʒj	fl.
Soda, Carbonate of Soda bi-carbonate	10 gr. – ℈j	6 gr.– 12	6 gr.– 3	gr.
Spirit of Camphor	20 gtt. – 30	6 gtt. – 12	5 gtt.– 2	drops.
Sulphur, Flowers of	ʒj – ℥ss	℈j – ʒj	℈j – 10	grains.
Sweet Spirit of Nitre	ʒj – ʒiij	℈j – ʒj	℈j – 10	fl. dps.
Syrup of Squills	ʒj – ℥ij	℈j – ʒj	℈j –12 gtt.	
Syrup of Rhubarb	℥j – ℥iv	ʒj – ℥ss	℥j – —	fl.
Tinct. of Assafœtida	20 gtt. – 40	10 gtt. – 20	10 gtt.– 5	drops.
—— of Blood-root, sanguinaria	20 gtt. – 30	8 gtt. – 15	6 gtt.– 3	drops.
—— of Foxglove	20 gtt. – 30	6 gtt. – 10	5 gtt.– 2	drops.
—— of Belladonna	20 gtt. – 30	5 gtt.– 10	4 gtt. – 2	drops.
—— of Lobolia inflata	ʒj – ℥ss	℈j – ʒj	℈j – 10	drops.
—— of Peruvian bark	ʒj – ʒij	℈j – ℥j	℈j – 12	drops.
Uva Ursi,—decoction, ʒj to one pint of water	℥ij – ℥iv	℥ss – ℥j	ʒij – ʒj	fl.
Wormseed	ʒij –	℈ij – ʒj	℈ij – ℈j	
White Vitriol, as an emetic.	gr. 10 –	gr. 4 – 6	gr. 3 – 2	

EXPLANATIONS.

The mark ℥ signifies ounce.
ʒ —— drachm, or ⅛ of an ounce.
℈j —— scruple, or ⅓ of a drachm.

The letters ss. signify *half;* thus, ℥ss, stands for *half* an ounce; ʒss, for half a drachm; gtt. stands for drops; so also do the letters, dr.; fl, signifies fluid;—thus, ʒj fl, means one fluid drachm: gr., stands for grains.

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BY

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INTRODUCTION.

The treatise of Doctor Eberle was first published in 1833, in the city of Cincinnati, and having been prepared with much care, it was stereotyped in view of the numerous editions that were anticipated, as needful to meet the wants of the profession. The increasing bad health of the author prevented him from augmenting the volume to meet the advances that occurred in this as in all the other departments of medicine; and his decease, a few years after, put a period to the expectations of his numerous friends in this respect.

The original work having been formed somewhat on the model of Underwood, and having been twice republished, with very little enlargement, is found at the present day to lack a considerable number of valuable items touching the diseases of infancy and youth; thus creating a necessity for some one to supply a pretty large bulk of matter, without which the continuance of public favor could hardly be anticipated. To fill the chasm, the subsequent pages have been prepared, so as to make the reader acquainted with the actual condition of the entire subject at this date.

Had not the stereotype plates been in possession of the present publishers, it might have been decided to issue a new work. But with this fact in view, added to the well-known popularity of the deceased author throughout the valley of the Mississippi, it was deemed best to adopt the present plan. The appreciation of the original treatise abroad is manifest from the frequent references to it by foreign writers, and especially by Churchill, in his recent work on the same subject.

Having been engaged for several years in teaching obstetrics and the diseases of women and children, the matter here presented as a sequel has become, in a certain sense, my own; and this may account for any apparent neglect to give all the authorities necessarily consulted in past years, some of which it would be difficult now to name. The most important consideration is the fact that the best information for the guide of the practitioner, within my reach, is here detailed; and it is believed that the younger members of the profession will find, in this enlarged volume, a safe and instructive counselor. To them, especially, the work is respectfully dedicated.

PHILADELPHIA, *July*, 1850.

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[For the accommodation of persons who own the third edition of Eberle, some copies of the *Sequel*, alone, have been issued, furnished with an appropriate index.]

A SEQUEL

TO

EBERLE ON THE DISEASES OF CHILDREN.

INFANTILE MORTALITY.

The fearful mortality of the infant race is a subject full of interest to the philanthropist and political economist, not less than to him whose special duty it is to study the constitutions and diseases of the helpless little ones, who appear on the stage of life for a moment, and then vanish from our view. We have never yet entered into the true philosophy of this subject, and have, therefore, not regarded it in its true light. That more than one-half of all the children born in these United States die under five years of age, is one of the most hackneyed truisms among us. So familiar have we become with it, that the melancholy reality has lost a large portion of its interest; and now we begin to doubt, and to raise the inquiry, Is it so?

It so happens that our municipal regulations are so well ordered in respect of births and deaths, that we are furnished with most accurate statistics, on which even the skeptic may confidently rely. If these be examined with a very little care, it will appear that the aphorism of infantile mortality, frightful though it be, is fairly established. That the manifestly non-viable, decrepit, and diseased should die, not only under five years, but even before the completion of one year, is not a matter of surprise. Nor do we wonder that many perish from sheer abandonment and reckless wickedness, whom a fostering care might have preserved. These and other sources of mortality ought not to attract very special notice, perhaps, and they fail to account for a tithe of the actual mortality.

The excellent essay of Mr. Hartley on milk has presented this whole subject in so clear a light, that we prefer to make large extracts from it, rather than to prepare a paper specially for the object now before us. The selections, it is hoped, will excite in the profession a deeper interest in this very momentous topic, and be instrumental in this way of doing good service to the community at large. The reader will discover that the evil has been gradually augmenting for a long series of years, and that in the principal cities of America it is far in advance of the Old World. We cannot regard any work on the diseases of infancy and youth as meriting the rank of a complete performance, if it fail to treat at some length of the true causes of infantile mortality. Holding the subject, as we do, as one of primary importance, we give it the first place in these humble additions to the work of Eberle.

"The following table, which is compiled from the printed documents, exhibits in an average of three different periods of time, including a series of twenty-nine years, the amount of infant mortality in Boston, and the per centage as compared with the total deaths.

Years.	Total deaths per annum.	Deaths under one year.	Between one and two years.	Between two and five years.	Total deaths under five years.	Per cent. of deaths under five years.
From 1811 to 1820	8020	1375	832	491	2698	33.64
From 1821 to 1830	10731	1962	1220	793	3975	37.04
From 1831 to 1839	14483	2861	1781	1598	6240	43.09

"Having ample materials, we exhibit a little more fully the statistics of Philadelphia and New York. The detail is important to our purpose, and can scarcely fail to be interesting.

"'The authenticity of the Philadelphia bills of mortality,' Dr. Emerson remarks, 'may be regarded as resting upon very solid grounds. From authority vested in the Board of Health, this municipal power makes it obligatory upon physicians to give certificates designating the name, age, and sex of all who died under their care; and sextons are bound, by still heavier penalties, not to permit the interment of any dead body until such certificate is obtained, which he returns on the last day of every week for publication.* The following table might have been extended farther back a few years, with some variation of result; but it appeared desirable to embrace a period corresponding in extent with the returns in New York.

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* Med. Journ., vol. i. p. 117.

A TABLE

Exhibiting the total deaths in Philadelphia, and of children under the age of five years, including a period of twenty-five years, viz., from January 1st, 1814, to January 1st, 1840. The still born are excluded.

Years.	Total deaths per annum.	Deaths under one year.	Between one and two years.	Between two and five years.	Total deaths under five years.	Per cent. of deaths under five years.
1814	2041	390	122	104	516	25.28
1815	1943	358	116	97	571	29.38
1816	2225	338	168	171	677	30.42
1817	2107	438	138	134	710	33.60
1818	2609	472	214	118	804	30.81
1819	2979	706	334	269	1309	43.98
1820	3189	650	307	241	1198	37.56
1821	2161	633	215	193	1041	48.19
1822	3334	696	243	193	1132	33.95
1823	4372	854	401	299	1554	35.52
1824	4284	936	384	364	1680	39.72
1825	3539	836	250	232	1318	37.21
1826	3845	844	380	285	1509	39.27
1827	3659	850	293	215	1358	38.75
1828	3971	933	395	329	1657	41.83
1829	4001	965	364	303	1632	40.78
1830	3948	1003	325	260	1588	40.22
1831	*					
1832	6699	1521	643	689	2853	42.58
1833	4440	1337	375	321	2023	45.56
1834	5073	1578	442	385	2405	47.40
1835	5666	1679	655	777	3111	54.72
1836	5373	1496	412	308	2416	44.94
1837	*					
1838	5168	1384			2552	48.10
1839	4765	1361			2461	51.83

"The subjoined table of deaths in New York is entitled, it is believed, to greater confidence than most European tables of this nature, where the report of deaths is not required to be made by medical practitioners. The existing regulation in that city requiring the sextons of the different public burying-grounds and cemeteries to furnish the city inspector with certificates from the attending physician, stating the age, sex, place of nativity, disease, etc., of each case of interment, under a heavy penalty for neglect, the returns, of course, are minute and accurate.

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* The returns for these years could not readily be obtained; but the general result is not thereby affected.

A TABULAR STATEMENT

Of the total deaths in the city of New York, and of children under five years of age, including a series of 27 years, viz., from January 1st, 1814, to January 1st, 1841, excluding the still-born, which average about 5.24 per cent. of the whole number of deaths.

Years.	Total deaths per annum, still-born excluded.	Still-born and premature.	Deaths under one year.	Between one and two years.	Between two and five years.	Total deaths under five years.	Per cent. of deaths under five years.
1814	1881	93	407	160	132	699	32.14
1815	2405	102	468	216	194	878	32.22
1816	2651	88	522	178	218	918	31.03
1817	2409	118	599	208	142	949	34.49
1818	3106	159	683	234	198	1115	37.02
1819	3008	168	847	306	188	1341	38.09
1820	3226	189	867	361	254	1482	38.87
1821	3368	174	825	369	261	1455	38.05
1822	3026	205	793	264	219	1276	35.42
1823	3221	223	899	315	230	1444	37.26
1824	4091	250	1072	397	389	1858	39.03
1825	4774	244	1109	386	300	1795	32.48
1826	4671	302	1232	476	350	2058	37.59
1827	4890	291	1336	546	389	2271	40.49
1828	4843	338	1427	460	339	2276	39.02
1829	4734	360	1390	496	465	2351	42.05
1830	5198	339	1547	575	517	2639	44 24
1831	5991	372	1757	663	592	3012	44.06
1832	9975	384	1922	830	965	3717	33.41
1833	5334	392	1724	552	468	2744	43.92
1834	8590	492	2603	900	861	4364	45.07
1835	6608	474	2176	707	732	3615	47.51
1836	7503	506	2332	1014	841	4187	49.06
1837	8182	550	1946	1001	961	3908	48.82
1838	7533		2051	983	802	3826	50.90
1839	7361		1968	976	752	3696	50.21
1840	7868		1959	1006	1011	3976	50.02

"The foregoing tables, it will be observed, though varying a little in results, essentially agree in establishing a principle. Two particulars stand out with startling prominence. First, the enormous extent of infantile mortality. Second, the no less alarming fact, its steady increase. Here is a destruction of infant life probably without a parallel in any civilized or barbarous community on earth. In two cities, New York and Philadelphia, MORE THAN ONE-HALF THE TOTAL DEATHS OCCUR UNDER THE AGE OF FIVE YEARS; and in the third city, Boston, where the mortality is least, it is *still greater* than the average in Europe.

"It is both an appalling and an anomalous fact, that excessive as is the mortality, it is continually *augmenting*. We have shown that during the last hundred years, the diminution of infant deaths in London has been from 74.5 per cent. to 31.8 per cent., and that the same principle is true of other cities in Europe. But in our American cities, as far back as satisfactory data can be obtained, there has been an increase of infant mortality in nearly the inverse ratio of its diminution in Europe. Results so opposite cannot proceed from homogeneous causes. In Europe, the favorable change is with great probability ascribed to a more rational treatment of disease, and to the increased intelligence and improved condition of the people. But is the reverse true in this country? No informed mind will venture to affirm that it is. Our cities, in these respects, have not retrograded. On the contrary, in all that pertains to viability and economical influences, they have progressed; and in several particular and general causes, which operate favorably on public health, they must be admitted to be in advance, not only of London, but of most other populous cities in the world. Such being the facts, by a parity of reasoning, a higher standard of infant health, and a proportional diminution of deaths amongst them, might be confidently expected. But the tables demonstrate the fallacy of such inductions. Infantile mortality is greater amongst us than in Paris, where so many causes which are unknown here combine to destroy early life; it is *eight* per cent. above Glasgow; *ten* per cent. above Carlisle, and nearly *thirteen* per cent. greater than in London. It is, in short, so far as we are able to ascertain, greater than in any of the populous towns in Europe. Whether, therefore, we understand it or not, a cause for this extraordinary disparity exists, which, operating in harmony with certain and unalterable laws, has for a series of years been geometrically progressing. What, then, is the cause of this excessive and increasing mortality?

"Were we competent to the investigation, *ex professo*, it would be inconsistent with the limited plan and design of this work to enter upon a minute inquiry into the various causes which influence health and diminish or increase mortality. We, therefore, remark generally that it cannot be justly ascribed solely to atmospherical influences, or to any peculiar insalubrity of climate; for the mean duration of human life, as shown by statistical computations, is greater in our American cities than in the cities of Europe. The annual proportion of deaths to the population in

London* is	1 in 35	Philadelphia†	1 in 47.86
Glasgow	1 in 44	Boston	1 in 41.26
Manchester	1 in 44	New York	1 in 37.83
Paris	1 in 32		
			3)126.95
	4)155		42.31
	38.75		

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* T. R. Edmonds, Lancet, Sept. 1836.

† Average of 14 years. American Medical Journ., vol. i. p. 154.

"Here is a demonstration that the American cities have an advantage on the scale of longevity of 3.56 per cent.

"Is it objected that these results refer to the total deaths, and therefore afford no just criterion of the effects of climate on the infant constitution? In answer, we quote Prof. C. A. Lee, of New York. 'In proof of the general healthiness of this city (New York), we would refer to the statistics of that most excellent institution, the House of Refuge for the Reformation of Juvenile Delinquents. This was founded in 1824; since which time there have been received into the institution 1670 children, of whom eighteen only have died, being a fraction over one per cent. Out of 919 children who have been received at the New York Orphan Asylum since its establishment in 1806, there have been seventy-five deaths, of which eighteen occurred in the year 1834, making a total of 8.16 per cent., and deducting the deaths by cholera, 6 per cent. of the whole number. From 1814 to 1820, it is a singular fact that there was not a single death in the institution, though there were generally over a hundred inmates; and in 1832, during my attendance, there was but a single death among 120 children, of whom there were not more than ten that escaped an attack of cholera, thus proving that the most malignant diseases lose much of their fatality when met with prompt treatment and good nursing.'* It is, therefore, leaping at a conclusion which is contradicted by facts, to refer the excess of infant mortality amongst us above what occurs in European cities to climate; for, independent of the above considerations, if climate was the cause, then must its salubrity have been deteriorating for the last quarter of a century in the ratio of the increase of infant deaths, a position no one, we suppose, will undertake to defend.

"Neither can it be ascribed to the physical or moral condition of the population. In regard to healthiness of situation, construction, etc., as well as atmospherical salubrity, the cities of New York, Philadelphia, and Boston will not suffer by comparison with those referred to, nor perhaps with any of equal size on earth. In some particulars affecting the general health, such as the drainage of marshes, the widening of streets, better regulations for the removal of impurities, etc., these cities have not only been greatly improved, but, as is shown by the official returns, and contrary to what the increasing infant mortality would indicate, the standard of health is higher than formerly, and the total annual deaths, according to the population, have ratably diminished. The waste of infant life in European cities, where so many causes conspire to produce it, is not a strange, but a natural result. The agents in the work of destruction are too palpable to be mistaken. The extreme poverty which there exists must give rise to numerous fatal diseases, and make direful havoc of infant life. But in this country the same causes do not exist, at least not in the same form, or to a very limited degree. Not only do the necessaries but also the comforts of life here abound, and are within the reach of all. Besides, the provident intelligence of the people, the social, civil, and economical advantages enjoyed are decidedly greater than in the densely crowded manufacturing towns of the Old World, where large masses of the people are condemned to wear out their lives in fruitless struggles to ameliorate their wretchedness. In addition to this, intemperance in the consumption of intoxicating drinks has greatly diminished amongst us, and, as the criminal statistics prove, with a proportionate decrease of the pauperism and vice, which are so generally the proximate causes of improvidence, disease, and premature death.

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* Lee's Medical Statistics, Am. Med. Journ., vol. xix. p. 27.

"The question again returns: What is the cause of this excessive infant mortality, and of the difference which in this respect exists between American and European cities? The alarming fact that *more than half* the total deaths occur among children who perish in their infancy, is one which not only concerns the medical profession, but also every parent and philanthropist, and political economist; for, if this frightful mortality is allowed to go on unchecked and increasing, as for a few years past, the time is not distant when it will be a rare occurrence for a child born in our cities to survive the period of infant life. If the evil be unavoidable where large masses of people are crowded together, exertions to diminish it must prove unsuccessful; and it were a folly either to attempt impossibilities or to complain of that which cannot be removed. But such is not the fact. Our records prove that the present was not always the condition of our cities in this respect; while foreign statistics show that the increase of this mortality, and the extent to which it now prevails amongst us is *peculiar* to our own country, and therefore not inseparable from the conditions of city life. No exertions therefore should be spared to discover, if possible, the cause or causes of this fatality, and the means which are competent to their removal."

It is impossible for any unprejudiced, sensible man, to peruse attentively the work from which the above remarks and facts are taken, and not be satisfied touching the prolific source of this terrible mortality of the infant race. We have noticed it briefly in the next item, as a prominent means of engrafting disease on the delicate constitutions of the tender being from the earliest moments of its existence. The poisoned, innutritious milk, formed from the washy slops of distilleries, is demonstrated to be the grand agent in the fearful work of destruction. To this may be added all the errors in feeding, physicking, clothing, and rearing of the helpless little ones, that find a place in all our cities, and especially in the habitations of the poor and the depraved. Thousands of very young children, deprived of the maternal nutriment, are fed on the miserable stuff sold for milk, almost exclusively. If we add to these the thousands whose nutriment is corrupted by want of cleanliness, and by actual filth, tq say nothing of the admixture of whisky potations, and other sources of physical wretchedness, we can be at no loss to account for a large portion of the mortality of the infantile race. In very many of these helpless beings, the work of deterioration is begun so early as to give the constitution a morbid bias, from which no subsequent care can ever rescue it. In others, although the evil appliances may be deferred a little later, their constant influence is to deprave and poison the fountain of life.

"No one," says Hartley, "on surveying the magnitude of this evil, will conclude that its influence is exaggerated. In the cities of New York and Brooklyn, nearly *five millions of gallons* of this milk are annually consumed, and probably in Boston and Philadelphia in nearly the same relative proportion. In the two former cities there are more than *twenty-five thousand* children under five years of age; and this pernicious milk, which is only fit for the kennels, constitutes their principal, and in numerous cases, their only food. When the support of infant life is converted into a source of disease and death, is it surprising that they perish by thousands?"

OF DISEASE AS ACQUIRED AND INHERITED.

We think it important, in the study of the diseases of infancy and childhood, to have correct views of the manner in which disease is acquired, and also of the mode by which it may become hereditary. A child may be born of healthful parents and possess a sound constitution, which may be so spoiled by improprieties in the process of rearing as to acquire or be invested with manifest morbid action. Of such a child, we speak correctly when we affirm that the disease thus set up is not hereditary but acquired. But if the infant, very soon after birth, be found to have a sickly constitution, and one or both parents be in bad health, we infer that here, as in nature generally, like has produced like, that the infantile disease is not acquired, but hereditary. And in affirming the latter, we do not mean to say that the parents' disease as such was transmitted, but that the parental organism being incorporated with the infant, created a liability amounting almost to a certainty that the child would exhibit in its constitution the disease of the father or mother.

We place acquired before hereditary, in this relation, because it is plain that disease must have been originally acquired, and not inherited. If the great progenitors of the race had any sort of morbid diathesis in their systems, it is obvious that the first man could not have derived that taint or tendency to disease from another, for the very simple reason that he was the first link in the great chain of human existence. Whatever of morbid qualities was developed in the course of Adam's life must, from the necessity of the case, have been acquired, adventitious, or, as some say, accidental. But if any sort of disease had been manifest in Cain or Abel, in early infancy, traceable to the previous impaired health of the father, that disease would be justly styled hereditary, because of the nature of a transmission from father to son.

With this brief explanation of the difference between acquired and hereditary disease before us, we are the better prepared to notice some of the agencies that operate to establish acquired diseases. The first to which I call attention is *the pernicious exhibition of opiates.*

The case is supposed to present an infantile constitution of great apparent vigor. All the indications at birth induce the strongest probability of thriving and of future healthfulness. Even the worse than needless exhibition of castor oil, to accomplish what patience and the meconium would have effected much more safely, and this followed by the injurious bathing of the tender surface with hot whisky, might not seriously injure the child. These are bad enough, in all conscience, and should have been long ago among the things that were. But when to quiet fretfulness that results from sheer neglect, or to indulge the indolence and recklessness of a nurse, the delicate stomach is drenched with opiate mixtures, day after day, until habit seems to make the poison necessary, the case assumes an aspect that can hardly be mistaken.

Do the delicate offspring of inferior animals make a regular and successful progress from birth to maturity with no impairment of their digestive powers? And why should not the tender infant, inheriting no special vitiating quality from parents, enjoy an equal immunity? The organism of the latter is equally perfect as that of the former, and even more so; and in itself considered, presents no reason why the passage from infancy to youth should be more marred by disease. Can we account for the disparity in this important particular?

We affirm that the secret of the difference lies in the fact that inferior animals are raised in conformity with the laws of their being, no instinct of nature being violated; while it is notorious that man, in the helplessness of his being, is tortured from the cradle to the grave by the laws of civilized refinement, of one grade or another, to the subversion of the laws of nature. The young pup draws its nutrition from its own mother, and thrives, because it obeys the ordination of heaven, and partakes of nothing in addition to spoil the work of assimilation. In its growth, there is a perpetual harmony of cause and effect, and it reaches healthful maturity because art is not permitted to intermeddle and mar the handiwork of Deity. The affinities of nature attract it to the fountain whence its support is to be drawn without delay, and it recurs thither as frequently as its wants demand.

Is the human infant favored thus? Would it not seem rather that its more elevated rank in organization has shorn it of its natural rights? Not satisfied with offending its delicate stomach with nauseous stuff, from which the mature man often recoils, and this to do a work of supererogation; not content with forcing into its mouth some incongruous mess, called food, to compensate for the strange deprivation of its legitimate nourishment, violence is done to the sensitive skin by sousing the little creature in cold water, or perhaps by rubbing it smartly with hot brandy, and all this repeated day after day. The responses of nature to this internal and external violence, done to a structure habituated for nine months to a totally different regimen, are presently offensive, and the cries of the sufferer are marked as tokens of a cross child. The idea that all this distress and inconvenience have been induced by positively bad management, and that the restlessness of the infant has been inflicted upon it by others, never crosses the mind. The babe must be composed, because its noise will injure the mother, and hence an early resort to Godfrey's cordial, or paregoric elixir, or laudanum, the legion curses of civilized nurseries. Were this outrage perpetrated only once in a week or a month, the recuperative powers of the system might rise superior to the infliction, and the organism remain unimpaired. But, alas! the deleterious dose is repeated with more regularity often than any positive duty; and the system, obeying its own laws, seems after awhile to demand the repetition. It may insure repose, but it does more. It renders absolutely necessary the administration of castor oil, or magnesia, or Epsom salts, or calomel, or rhubarb, not to help nature to take care of herself, but to rescue her from the sad dilemma into which she has been forced by the means employed to quiet her clamors against previous violence. And how does all this procedure affect the powers of digestion? Is it not certain that even the natural aliment offends the stomach, and that various substitutes are tried to meet this difficulty? What is the matter? I reply that the mucous coat of the stomach has already received a shock from which it may never fully recover. There can hardly be a reasonable doubt that a very large number of the cases of youthful and adult indigestion, that terrible bane of human comfort, have their rise in the early months and weeks of infancy, and are induced by the circumstances of which mention has just been made.

It does not relieve the case of a particle of difficulty to suggest that the maternal system may be at fault, and that consequently the milk secretion is insalubrious. The starting point of error in respect of the infant is the fertile source of suffering experienced by the mother in the want of needful rest to reinvigorate her frame. Every repetition of wrong to the child adds new irritation to the system of the parent, and this mutual suffering being continued for months, not only breaks down the constitution of the parent, it may be, but gives to the child a morbid tinge from which it may never recover. The brain and nervous system are perpetually implicated by the artificial disabilities of the stomach and bowels, and every fibre of the frame seems to be under a compulsory process to take its share in the common wrong.

Who can fail to perceive in all this array of unfavorable agencies, working all the while on a delicate machine, a tendency at least to derangement? Even in the higher walks of society, where the new-born infant is not at once abandoned to the care of a stranger, but is in some sense nursed by its own mother, the causes referred to must exert a deteriorating influence. And if such be the fact, what can be hoped in respect of the thousands of infants in the vale of poverty?

We affirm, as our deliberate conviction, that the violence done to the entire system through the stomach in the manner specified, brings the ultimate result of such deterioration of the fluids and solids, so as to establish a *scrofulous diathesis* with all the train of evils that legitimately appertain to it. Indeed, it would seem to be unavoidable, that agencies early and persistently employed antagonizing with the native tendencies to health, should result in anything less disastrous than disorganization or derangement.

The evil is not abated, but rather enhanced in importance by the consideration that it is really unnecessary and might be averted. The human stomach was not made to be a depository of drugs and poisons any more than the stomachs of inferior animals; and hence the self-evident nature of the proposition, that a *healthful new-born infant does not need any sort of medicine by the mouth during the first year of its life.* And in respect of opiate medicines, abundant experience has shown that all the effects expected from them can be more certainly and safely secured by injections of the milk of assafœtida, by warm bathing and frictions to the spine. I have found these expedients to succeed most happily in allaying irritation, giving necessary rest, and securing to the system its more perfect development. A drachm or two of good assafœtida should be well rubbed in three or four ounces of water, and kept in a well-stoppered bottle in a cold place to avoid fermentation. An ounce of this solution may be thrown up the rectum, and repeated if necessary, making use also of the warm bath. The frictions to the spine may be made with a mixture of sweet oil and the oil of cinnamon, and a few drops of aqua ammonia, the whole being gently heated, and the part covered with soft flannel.

If the infant be properly managed, as already hinted at, to the termination of the lactation period, there will be little danger of acquiring a scrofulous taint, or any other morbid quality provided the constitution was originally good. And even after that period has been successfully reached, it is of great moment that all forms of medicine by the mouth be rigidly avoided, and the diet be regulated as far as possible by the real wants of nature.

Another agency, perhaps more detrimental, because more universal in establishing a morbid predisposition, is found in the *depraved quality of the milk of all large cities.* No one who has not read the work of Hartley on this subject is competent to form even a tolerably correct judgment in the premises. The author of the *Essay on Milk*, just alluded to, made most laborious researches into the milk establishments which supply the great city of New York with this fundamental article in the diet of infants and young children. His work appeared in 1842, and although for a time there seemed to be some efforts at reform, we are inclined to believe that no actual and permanent improvement has been realized.

When we remember the well-known aphorism, *As is the food, so must be the blood*, we feel almost horrified at the details presented on this momentous theme. How stand the facts? Immense distilleries annually consuming, or wasting rather, millions of bushels of grain, to burn out the vitals of the people, sustain their establishments to a large extent by the sale of slop stuff, which goes to the great dairies of New York to sustain the cows and augment the quantity of their milk secretion. The whisky dregs are mainly the food of these animals, to the exclusion of three-fourths of the hay which they should be allowed. The cows thus mocked with a substitute for their legitimate food, are kept in one position, without exercise, for months in succession, until no longer fit for the purpose, when they are killed for the beef market. During all this confinement, their systems are vitiated, and they become the prey of all forms of disease. What can their milk be to the delicate stomach of the infant or young child but a slow poison? What can it induce ultimately but a veritable milk-sickness? The hundreds and thousands of children, fed almost exclusively on such a diet, must, by the very laws of their being, have their fluids and solids, every drop and fibre, contaminated by the baleful influence of causes thus perpetually in operation. If, as Pereira has justly said, a salivated nurse can salivate the child fed from her breast, is it less likely that the morbid qualities of cows, fed and kept as they are in the dairies of large cities, must contaminate the systems of the doomed infants whose subsistence is drawn from such a pestiferous fountain? Can any one doubt that an infant born perfectly sound and vigorous, with no sort of hereditary taint, will, as a result of such nutrition as diseased cows fed on whisky slop must necessarily furnish, acquire disease, and soon evince its manifestations? That such is their destiny, under such influences, is a fact stamped with certainty as indubitable as their being. Like must ever produce like; and the result is not the less sure because we close our eyes and shut out the truth.

It is not our purpose here to enter on a discussion of the question of infantile diet, since that has been pretty fully examined by Dr. Eberle; but we feel it to be our duty to invite the attention of physicians in all cities to this great subject, believing that it accounts for the terrible mortality of infants, to a very considerable extent, and more satisfactorily than we can explain it on any other ground. Does any one feel disposed to rebuke us for the prominence we give to the influence of the scrofulous diathesis in the development of disease? Let him look at the notorious fact that the cows whence infants draw their life blood are themselves the victims of tuberculous disease; that they perish finally of consumption of the lungs, in very many instances, to say nothing of other morbid actions in their systems; and he will not be slow to learn that the deteriorating agency of scrofula is, in numberless cases, referable almost exclusively to this prolific source.

The foregoing remarks on disease as acquired have much greater force in respect of hereditary disease. The definition given of this phraseology implies an existing disability, a defect in organization, as a consequence of which the infant will be apt to suffer from the same kind of disease that embarrassed the parent. The necessity for great care in the rearing of the infant is much enhanced by this contingency, while the pernicious tendency of opiates and a wrong diet is manifestly augmented. Gross errors in infantile training, acting on a system already deteriorated, make the morbid manifestation in scrofulous or other development much more certain, and hence the greater need of vigilance to protect the system from their influence. These remarks will the better prepare the reader for a consideration of the

SCROFULOUS DIATHESIS AND SCROFULA.

It may be that some persons have unduly magnified the pathological bearings of this interesting topic. But the more we analyze infantile disease and the human constitution, the more thoroughly will we be assured of its paramount influence. Such, at least, is my honest conviction. Failure to detect this diathesis has nullified treatment that seemed in other respects to be exceedingly judicious; and this remark will be confirmed by reference to the cases in which mercury has not done good but harm, chiefly because of a scrofulous taint unperceived at the time of exhibition.

We propose to attend here briefly to the following points, that have an important bearing on this whole subject:—

1st. The tokens of the actual presence of the scrofulous diathesis.

2d. The most suitable means for the correction of it by medicinal and hygienic treatment; in other words, the *preventive* management.

3d. The periods of life when this diathesis makes its manifestations, and also the parts of the system where these appear; the progressive development of those manifestations, and their tendency to invade the lungs.

4th. The circumstances most likely to aggravate both the diathesis and its subsequent manifestations.

5th. The *curative* indications when the disease is fully developed.

It must not be expected that the visible tokens of the presence of the scrofulous diathesis will be so palpable in all cases as to make mistake unavoidable. Not only in infancy but in adult life, the diathesis may remain very much in abeyance, so as not to be detected by an ordinary observer. Yet there are frequently to be found certain clear indications, very early in life, which, associated with known facts in the parental history, can hardly fail to guide us aright. The fair soft skin, the large blue eye, the tumid upper lip, the languid yet irritable constitution, are often noticed in early infancy in this relation. The augmented softness and flabby aspect of the frame, as youth is reached, furnish auxiliary testimony. The muscular system is now found to be unduly slender and palpably deficient in tone, while the mucous membranes are susceptible of irritation from very trivial causes.

This scrofulous diathesis, thus visible, and coming from one of the parents, is an obvious transmission, not only of physiological peculiarities, but of pathological tendencies; and believed for this reason to have its seat primarily in the blood, and secondarily as a necessary consequence in the tissues. Here is a radical fault, a deep-seated constitutional error, the correction or annihilation of which, if at all practicable, is of the last importance. Can this be accomplished? Our *second* inquiry bears directly on this point, and leads us to notice briefly the most suitable means for correcting the diathesis, or, in other words, the *preventive* treatment.

If we know that parents are themselves the subjects of a scrofulous taint, we may take it for granted that the offspring will not escape. The law of perpetuation is as inflexible in the animal as in the vegetable kingdom. And hence we may begin at the earliest period of infancy, in such cases, to do what we may be able to accomplish, in the task of regenerating the system. The design is so to lessen or destroy the bias of the morbid diathesis as to prevent its ulterior developments in the system; and this calls for the negative cautions already dwelt upon, in respect of opiates, feeding, and the like, and also the employment of all positive helps that may be available. It demands even more, and insists upon a prompt change of locality from a damp underground, or otherwise insalubious residence, to one that is manifestly endowed with all the qualities of a salubrious home. It is utterly impossible by any appliances on earth to rectify a depraved constitution, whether infantile or adult, if this precaution be not rigidly observed. A great work is to be achieved. A derived taint is to be expelled from the system, and that taint has its origin in bad management, bad training, a bad locality, one or all combined. To meet the case, we are forced to put into requisition every available means of bettering the constitution, while at the same time we protect it as far as possible against every deleterious influence. Here is the secret of success, in a nut-shell, and success is practicable on no other principle.

A sea-side residence, at a very early period, and daily sea-bathing exert a most happy influence in this relation, and when at command, should be perseveringly tried. In respect of medicinal treatment, we do not feel of course disposed to be urgent in the cases of infants, and yet we would not hesitate to try the effect of clysters of cod-liver oil daily, and the internal administration of small portions. It would be safe to inject half an ounce of the oil every day, and to give the third of a teaspoonful twice a-day, even in the case of a very young infant. The testimony of Drs. Brefield and Galama, in the *Gazette Médicale de Paris* for May, 1848, is in our judgment decisive. It presents the most satisfactory proofs of the power of the oil to control the morbid diathesis under consideration. It teaches that although weeks may suffice occasionally, it may be needful to continue the preventive for months. The remedy, besides fatty matters and phosphates, contains a minute portion of iodine and bromine. Taken with a little tincture of ginger, or ale or coffee, it is not at all disagreeable.

The principle involved in the preventive treatment just named is fully corroborated by the judicious course pursued by Lugol to prevent abortion. Called to females who had aborted several times, despite what was regarded as very appropriate treatment, this acute observer thought he saw in the cases some tokens of the scrofulous diathesis, although the only manifestation was the fact of repeated abortion. With this point prominently before him, the tincture of iodine was administered in five-drop doses, gradually increased, intermitting its use after some eight or ten days for a short period, say two to five days, and then renewing the medicine as before. Thus managed, his patients went to full term and had living children.

Our *third* point relates to the periods of life when the diathesis, unchecked, ordinarily makes its manifestations, and also the parts of the system where these usually appear. In reference to the former, we remark that between the third and thirteenth year of life is the range usually assigned; though we feel confident the diathesis may and does display itself at a much earlier, as well as at a later period, than the extremes mentioned. Still it is true that the statement may be regarded as a general fact. The local manifestations are external and internal. We see the former in hard, indolent tumors in the glands of the neck, under the jaw, and behind the ears. These may remain for a long time, as mere lumps, so small as scarcely to be noticed; they may entirely recede, and then return, with or without treatment. These tumors are sometimes so obviously affected by damp and chilly weather, of several days' continuance, as to require particular care. They may become inflamed, may suppurate, ulcerate, and discharge a peculiar, curdled, soft, cheesy mass, sometimes like coagulated milk, and so manifestly variant from true pus as to justify the appellation of *scrofulous* pus. Occasionally, these suppurating tumors appear to heal; and sometimes do, presenting a peculiar cicatrix that is also called *scrofulous*, because of its association. Now and then the eyes are invaded, and the entire manifestation is in the shape of scrofulous ophthalmia, affecting the tarsi, the adnata, cornea, &c. The joints often suffer terribly, even in young subjects; and many cases of disease of hip joint in children, as well as in adults, are traceable to the same cause. The peculiar discharge from the joints, and the general aspect of the patient, tend to confirm this view of the case. The matter finds vent at many points, invades the ligaments, cartilages and bones, and involves the subject in wasting hectic and night sweats.

Sometimes a patient will appear to be quite sound in the chest and yet have external tumors. The continuance of these, as such, or their change to actual ulceration, or their apparent recession, are contingencies that depend on various peculiarities that must be sought in individual cases. Their liability to invade the lungs, the mensenteric glands, and other internal structures, is an interesting feature in their history, and forces the belief that a deteriorating agency is exerting a general sway over the entire constitution. The late Dr. Parrish instituted an inquiry during my pupilage, to determine the extent of this scrofulous influence. He made a vast number of dissections in the Philadelphia Almshouse, of which I was a witness, and which revealed the important truth that the same kind of suppurative tumors found on the surface of the body were also in the summits of the lungs, in the glands of the mesentery, and other internal organs.

The most minute deposit in the lung structure may remain unchanged for a long time, and be suddenly started in its growth by hemorrhage or a slow fever. The development may then steadily advance, as it often does, until the tubercular or scrofulous phthisis is established.

The *fourth* point to be noticed includes the circumstances most likely to aggravate the diathesis and its subsequent manifestations. Here it is not necessary to enter into details. Anything unfriendly to steady growth and permanent vigor will operate to give greater fixidity to the diathesis, and hence all such agents should be avoided; and the same remark is applicable to the actual manifestations. Intemperance, vicious habits, unwholesome food, an insalubrious residence are all calculated to exert a most pernicious influence. They operate constantly to impair the vital energies, poison the fountain of life, and to perpetuate the morbid taint to an indefinite period; and such will be their effects, unless duly counteracted.

The *curative* indications, when the disease is fully developed, constitute the last point of inquiry. And here we make what we regard a fundamental remark, viz., that no sort of treatment can permanently avail that has not special regard to the general health. The subjects of the disease resident in damp, low, underground apartments cannot be cured while they reside there. A dry, salubrious, airy residence is of vast moment. A temporary sojourn at the sea-side cannot be an exception to this statement, because the entire effects of such a location are salutary.

It is a fair presumption that a youth in whom there existed some slight external manifestations of scrofula, and who had probably a tendency to pulmonary disease derived from his parent, might be the subject, not only of successful preventive efforts, but equally so of curative appliances. Transported to a congenial clime, with a view to residence there until the age of twenty-five, and put upon the persistent use of some preparation of iodine for a season, guarded all the while most vigilantly in respect of diet, habits, and living in general, it is more than probable that all external tokens of scrofula would vanish, and that the system would be rescued from the hazards incident to a scrofulous diathesis. This course of procedure should always be earnestly insisted upon, when there is ability to carry it out.

When consulted in relation to those who possess very limited means, we must give the best advice we can, in view of the circumstances. Let it be borne in mind that the disease is often manifestly enfeebling, and that consequently a tonic treatment conjoined with substantial, nutritive diet, is called for. Good beefsteak, porter, and the bitter infusions are far better than vegetable slops. The clothing should be carefully varied to meet the frequent vicissitudes of temperature.

The medicines best suited to scrofulous debility are the iodide of iron and the iodide of quinine, of each of which half a grain may be given thrice a-day to a subject from five to ten years of age, in syrup, the dose being gradually augmented. These happy combinations operate by restoring the lost tone of the system and keeping in check the scrofulous manifestation.

In several instances, it has been my good fortune to succeed in the complete removal of numerous scrofulous tumors from the necks of patients under twelve years of age, by the exhibition of the tincture of iodine, in doses of from three to five drops thrice a-day, gradually augmenting the dose, and touching the tumors with the tincture at bedtime. In all the cases so treated, the cure seemed to be perfect; and after the lapse of many years, there was no renewed development in any part of the system.

The scrofulous ophthalmia spoken of yields to no treatment as it does to iodine. I have been in the habit of using a modification of Lugol's solution, dissolving from a scruple to half a drachm of the hydriodate of potash in four or five ounces of water, and adding to the solution ten grains of iodine. Of this mixture, the dose varies from ten drops to a teaspoonful according to age, and should be given twice a-day, then three times, and gradually increased. The eyelids or other parts of the eyes are to be touched night and morning, with a like solution, only made of double the strength above indicated. Under this treatment, and the proper avoidance of all exciting causes, the most obstinate cases have soon improved and been permanently cured. I had some striking cases of the kind in the West.

Of the use of cod-liver oil, for the dissipation of tumors and the cure of scrofulous ulcers that are so exceedingly hard to manage, Dr. Brefield speaks in the most enthusiastic terms of commendation. The remedy is to be taken internally, as already indicated, and to be frequently applied to parts affected on lint, or in the shape of a cerate.

In respect of the means to allay the pain of scrofulous tumors and ulcers, let me caution against the use of opiates. Their deranging influence on the stomach and bowels is not a temporary evil only, but may, and in fact does, aggravate the morbid diathesis. The extract of hyoscyamus in equivalent doses is always safe, and equally efficient for the relief of pain.

Several of the diseases of children to be noticed in this sequel are, in my judgment, so closely related to the topics just considered, that I design to introduce them in that connection. I do not mean to say, however, that these diseases are always and necessarily scrofulous, but that they are frequently so.

BOWEL COMPLAINTS OF INFANCY.

An apology is not necessary for the introduction of this topic, notwithstanding the notice of cholera infantum in the former part of this volume. What is popularly termed bowel complaint of young children is not infantile cholera, and hence it finds a legitimate place here. That the affection under consideration is chargeable to the scandalous mismanagement of the early months cannot be doubted. The perpetual dosing with cordials and essences, so pertinaciously practiced even in the first week and subsequently, is often decidedly hurtful, and cannot be too severely denounced. Should the child pass unhurt through this ordeal, and its bowels fail to incur serious detriment thereby, abundant mischief is inflicted afterwards by the shameful repetition of drastic purgatives. Calomel and scammony are given to very young children; and though twenty stools may have followed, the dose must needs be repeated, because the stools do not even yet look exactly right; and every dose makes the matter worse.

In addition to the damage consequent on the purgative course, not a little mischief follows the process of stuffing with all sorts of things, as though the infant were an omnivorous animal, and could digest any item that might find entrance into the delicate stomach. The mother who believes in extra physicking is not slow at the work of extra feeding; and food sour or sweet, thick or thin, as it may happen, is packed away until nature comes to the rescue and kindly ejects the load. Or, if vomiting fail to quiet the oppressed and fretful child, the next step is to shake or roll it, or to administer some of the opiate poisons of which mention has been already made. If these afford present relief, they rarely fail to induce constipation, and then it is deemed indispensable to administer a dose or two of castor oil. Thus, to relieve flatulent distress in the stomach induced by too much food, and to correct bad-colored discharges from the bowels, cathartics and opiates are called for, and if not really necessary, are given in close succession. If these fail to meet the intention, the mother fancies the little one's stomach is empty, and that repletion with sour or musty pap is just the thing needful, and forthwith the stomach is again packed. Thus the history too often reads from day to day, and from month to month.

This is not a fancy sketch, but true as real life, less highly colored than numerous facts would fully warrant. And who can fail to perceive how ruinous such a plan of training must ultimately be, even to a constitution originally sound? How much more disastrous when acting on a system already under the influence of a scrofulous taint. Would that I could convince every mother that not one infant in a thousand stands in need of any internal medicine, and that thrift and vigor would more certainly follow the use of a fourth part of the food ordinarily consumed! If these truths were duly realized, sure I am that infantile mortality would soon fall below the standard, to an astonishing degree. When the bowels call for evacuation, how simple is the exhibition of a mild injection, or the use of a suppository; and how much less hazardous than the repetition of cathartics by the mouth. That injections of assafœtida are far preferable to opiate doses has been already shown, but cannot be too frequently urged. The addition of frictions to the spine and the use of the warm bath, with exclusive feeding at the mother's breast, or on pure cow's milk diluted, will prove far more salutary to the bowels and entire system than the best selected cathartic or opiate medicine, and wholly free from the risks involved in the latter.

It should not be forgotten that some infants will have many stools in a day and continue all the while to thrive. In such cases, it is very manifest that corrective medicine is uncalled for. On the other hand, there are infants whose bowels are so seldom evacuated that constipation may be named as an evil to be rectified; and yet the children do remarkably well, look plump and vigorous. Is it worth while to teaze such a child with physic? Rather let well enough alone, or at most try a suppository of soap or of rolled paper, and the desired relief will come. It has often occurred that a temporary change of milk has wrought the desired motion of the alimentary canal; and this is a much better expedient than cathartic medicine.

The color and consistence of infantile stools may vary considerably, and no serious inconvenience ensue. The discharges that are bluish, or whitish, or clay-colored, though few in number, are regarded as among the most to be dreaded, because very apt to end in an intractable diarrhœa. In some instances, the clayey matter accumulates, becomes pretty hard, leading to constipation, followed in a day or two by diarrhœa of such a teazing nature as to force a prolapsus ani.

A marked alteration is frequently noticed in the condition of the bowels soon after weaning. The sudden change of food—often for the worse, too—is a source of serious annoyance. Hence the frequent purging with occasional vomiting, the feculent and mucous stools sometimes tinged with blood, and also the dirty watery-looking, highly offensive evacuations forced from the bowels very suddenly and with great violence. These changes serve to show how susceptible the mucous coat of the bowels is to so simple a thing as a change of food, and how ill fitted it is to endure the action of rough cathartics.

The Treatment.—How shall we treat these bowel affections? It is very important to manage them properly and at an early period. At so tender an age, we may inflict a permanent injury if a wrong course be adopted. When we can be assured that the disease is dependent chiefly, or very much on the injudicious employment of cathartic medicine, their further use must be prohibited forthwith. If the child has been fed on indigestible food, recourse must again be had to the breast, or to the nearest substitute, selecting the purest and best. If the stools are green, it may be owing to the use of calomel; and if that be so, lay it aside. If they are very yellow and watery or brown, there is probably an excess of bile; if of the bluish variety or very white, a lack of bile may be inferred. Such conclusions are generally, yet not always, correct.

When the stools are watery, and brown or yellow, it may be well to give a child from nine to eighteen months old a half grain of calomel with a little powder of gum Arabic twice a-day, and on the next day a teaspoonful of fresh castor oil. An irritable state of the bowels is often corrected in this way very promptly. Sometimes the warm bath and a teaspoonful now and then of chalk julep, or half that quantity will serve the purpose, especially if the child be fed on arrowroot well prepared and pleasantly seasoned with sugar and nutmeg. If the stools are bluish or of a clayey white, it may answer very well to give from a fourth to a half grain of calomel every hour for six hours, and then a dose of castor oil. This with proper attention to diet will often afford the desired relief very promptly. In all cases, there is obvious advantage in a bandage of very fine flannel passed three or four times around the abdomen, so as to give support and yet not to be applied too light.

If fever and fretfulness be conjoined with looseness, if the child cry a good deal and is wasting, it is needful to take the alarm lest inflammation of the mucous membranes supervene. If the child be no longer at the breast, let pure whey or cow's milk be its constant food. The warm bath should be resorted to night and morning, and the child should be kept in it for the space of ten minutes. Let two grains of hydrarg. cum creta be administered every three hours, and once in six hours three grains of

Dover's powder; or a fourth of a grain of calomel and a grain of Dover's powder, mixed, every hour or two.

Should feverish symptoms persist, it may be necessary to apply two or three leeches to the abdomen, and after that to rub gently into the surface some heated spirit of camphor and sweet oil; a teaspoonful of each will answer for this end.

Some of these bowel affections depend very much on a scrofulous taint, and will not yield to the remedies we have suggested. When that is the case, it will be proper to give the iodine liniment a trial. It is made thus:—

℞.—Ol. olivar. ℥i;
Iodin. ʒss.

Let these be intimately mixed, and a portion rubbed into the abdominal surface twice a-day.

The physician may not be consulted until the disease has very much exhausted the vital energies, and then it will be necessary to resort to some suitable stimulant, as a little weak brandy and water moderately heated. It may be needful also to check the discharges by an astringent or opiate injection. A warm bath, rendered more stimulating by the addition of a teaspoonful or more of flour of mustard, will sometimes prove a happy auxiliary.

It sometimes happens that the bowel affections of children become decidedly chronic, involving neighboring structure, and if the child be at all scrofulous, laying the foundation for

TABES MESENTERICA.

Sauvages denominated this disease *Scrofula mesenterica*, by which he meant scrofula of the mesenteric glands; and it is probable that the disease is almost always essentially scrofulous. It is attended by great wasting of the substance and vital force, conjoined with palpable enlargement of the belly.

For the most part, this disease is seen among the poorer classes, whose living in all respects is calculated to vitiate the entire system. As a consequence of long irritation, augmented and made persistent by the morbid diathesis, the alimentary canal is almost if not quite incurably deranged. Every day and almost every hour, the tokens of waning power are more and more manifest. The extremities and face waste rapidly, forming a singular contrast with the unnatural tumefaction of the abdomen. The appetite is exceedingly variable; now voracious, and again rejecting almost every kind of diet. Craving thirst and griping pains augment the suffering.

The cases of tabes present some diversity, however. One child may be quite feverish, while another shows scarcely an indication of the kind for days; if there be fever at all, it comes in the night and passes off towards daylight by perspiration. In some instances, the abdomen is doughy and knotty, especially if pressed, while in others it is tense and tympanitic. The early tumefaction may be chiefly from flatus; at a later period it depends on actual effusion. At length the child labors under an almost continued and exhausting purgation, which soon closes the scene. Not unfrequently the brain or the lungs are sympathetically involved, and the case is then aggravated by the complication.

Dissection has almost uniformly revealed enlargement of the glands of the mesentery. These are variable in size and consistence; sometimes small, and occasionally as large as a hen's egg. In the centre of these enlarged glands, a softened matter has been found not unlike the scrofulous pus named before. In addition to the thickening and enlargement perceptible, there are sometimes traces of chronic peritonitis. Occasionally, too, we find ulcerations, more or less extensive, of the mucous membrane of the bowels, the result no doubt of continued subacute or chronic inflammation. Sometimes the entire inner surface of the colon has been found rough and ragged, the bowel presenting an unusual degree of thickness. Now and then the lower portions of the ileum and cæcum are diseased even to ulceration, and the same lesion has been found also in the jejunum.

The *treatment* of this disease may be pronounced unavailing. When fully formed and of long standing, it is not amenable to medical management. We may palliate symptoms, and, by endeavoring to do thus much, there is a bare possibility that we may accomplish more. The ointment of the hydriodate of potash, or of iodine, or the cod-liver oil rubbed gently over the entire abdomen daily, and kept constantly applied by means of a flannel bandage, promises as much as any other device. In regard to diet and drink, anything desired may be allowed, unless manifestly calculated to do harm.

DISEASES OF THE JOINTS.

The fact that these are usually regarded as strictly within the purview of surgery, is no valid objection to giving them a brief notice in a book devoted to the maladies of children and youth. It is our purpose to present such an outline as may be useful to the general practitioner, referring him at the same time to the admirable work of Brodie for the details. The first item in this connection is

Inflammation of Synovial Membranes.—It is usually affirmed that this affection is generally associated with rheumatism, but I have found it also a very embarrassing companion or sequel of autumnal fevers. The most troublesome cases are often of this kind. In both cases, whether from rheumatic disease or fall fever, the joint of the knee is suddenly a matter of complaint. The pain is referred at first to a spot, but spreads rapidly to the whole of the joint, involving it in considerable tumefaction. There is generally more or less redness and heat of the surface; and sometimes you seem conscious of fluctuation, when in fact there is no collection beneath the skin. In other cases, there is actual effusion, constituting a valid basis for fluctuation. Very soon the limb is flexed, and that position is courted in order to abate the pain. Unfortunately, when inflammation runs high and coagulable lymph is thrown out in considerable quantity, the flexed position remains; and as the lymph has assumed an organized state, this malposition is often a very obstinate affair, and sometimes establishes permanent lameness. All this may result from mere translation or metastasis of disease, for which the physician may not be in the least degree censurable; and yet he is often denounced because the accident has occurred. I have never known a case of this kind to terminate in abscess of the knee joint, and such an occurrence must be rare.

The *hip joint* is liable to severe and destructive inflammation, which involves the capsular ligament, and even the bony structure, in its terrible ravages. Elsewhere, I have said that this is very generally a scrofulous affection, and indeed I have never known it to be otherwise. Although pus is largely formed, fluctuation is not perceptible because of the deep-seated location of the disease. The superincumbent cellular texture is very much tumefied, however, at an early period, and the side affected prevents a marked disparity with the opposite hip; and this is one of the first positive sources of alarm, in cases that have not been attended by severe pain. In the progress of the disease, this swelling is lost, and the absorbing process actually induces an opposite state of the parts, which exhibit a flattened aspect.

There is a delusive symptom inherent in this affection that must not be overlooked. The child may have been in general bad health, and therefore often complaining, yet not exciting suspicion of hip disease; and the first complaint of distress in the joints is referred to the knee, and it may be that the discovery has been made of a blow or a fall on the knee. The delusion depends on the morbid state of the crural nerve, which is necessarily associated with the hip-joint, and sends filaments to the region of the knee. Why the knee should be the first to denote the presence of disease in the hip is not fully explained, even by the nervous relationship; and yet the fact must be remembered, for it is of great practical value. Let the hip on the same side with the knee that is complained of be instantly examined with care, and it will be seen that it is considerably enlarged, while the whole limb appears to be elongated. Often the apparent elongation is caused by the patient throwing the weight of the body on the sound to relieve the diseased side.

When active inflammation invades any joint severely, involving the entire synovial membrane, it induces symptomatic fever with all its ordinary concomitants; and this is often noticed when the hip or knee is implicated.

When the effusion consequent on synovial inflammation is not very large, it is not unfrequently removed by absorption, and the joint regains its original state. But when the absorbents are paralyzed or their functions only impaired, the matter effused becomes a basis of induration and immobility to a greater or less extent.

The *causes* of inflammation in these joints are various, and operate differently, as the constitution is depraved or otherwise. We have already affirmed that the scrofulous diathesis is at the bottom of the difficulty in nearly all cases, and need not repeat. Cold is unquestionably a frequent cause, and especially operative after undue exercise or over-action of the joints. Falls directly on the knee or hip, or blows inflicted, may induce the disease.

The Treatment.—In many cases of inflammation of the knee-joint, local remedies will suffice. Leeching or cupping should be employed, with a view to deplete directly from the parts more immediately involved. If the state of the general system call for it, bleeding from the arm should precede the local depletion. Subsequently to this, it is needful to direct suitable applications to the region. Some have advised the use of evaporating mixtures, with a view to the reduction of the heat of the parts, and these are to be kept on constantly. Iced water, and even pounded ice, as also a mixture of alcohol one part and water three parts, have been employed. Others have preferred cloths wrung out of hot water to be repeatedly laid over the entire knee.

The obvious design of all this local treatment is the reduction of the inflammatory action, after the accomplishment of which it is necessary to subdue the swelling, which is often so considerable as to embarrass the use of the limb. To effect this object, all sorts of stimulating embrocations have been tried, none of which is superior to the well-known compound camphor liniment, called *opodeldoc.* A much more potent application is the liniment of Brodie, composed of three parts of olive oil and one of sulphuric acid. The action of this mixture is very decidedly counter-irritant, and it is sometimes necessary to augment the proportion of sweet oil. The longer the external irritation is maintained the more perfect will be the restoration. Pustulation, with the mixture of half a drachm of croton oil, a scruple of tartar emetic and half an ounce of sweet oil, will often succeed very well. It should be rubbed into the parts on flannel night and morning until pustulation is induced. To relieve the pain of this irritation when excessive, let soft bread and milk poultices be applied two or three times a-day. In the use of this irritant mixture, special care must be observed to prevent the eyes from being brought in contact with it.

It is hardly necessary to say that in the early treatment of this disease, and until symptoms of inflammatory action have been subdued, the limb should be kept in the horizontal position as constantly as possible. After the counter-irritant applications are resorted to, it is desirable to make slight efforts to use the limb, every day, yet always with great care, and prudently to augment the exercise of it in such a manner as not to make it a source of pain.

A similar course of local treatment has been advised in reference to disease of the *hip joint*. More commonly, however, this has been restricted to local bleeding. The late Dr. Physick, in addition to this, kept the patient in a horizontal posture, with the limb confined by means of an accurately carved splint, fitted to the entire form of it, and reaching above the pelvis. He relied very much on the antiphlogistic powers of the compound powder of jalap (two parts cremor tartar and one of jalap), given every day, so as to keep up free evacuations from the bowels, the patient being kept all the while on very low diet. One of the very few times in which I ever knew him to smile while lecturing, was in describing this treatment. He was wont to say, "Gentlemen, notwithstanding all this purging, the child got fat."

Various other devices have been constructed for the purpose of maintaining the limb and joint in perfect quietude. And yet some practitioners have succeeded without any contrivance of the sort, attending almost entirely to the reduction of morbid action by free purgation, and the repetitious use of leeches to the hip, and these followed by blisters.

When the local disease is evidently complicated with a scrofulous diathesis, it cannot be cured, nor even materially relieved, unless the system be put under the influence of iodine. In such cases, suppuration not unfrequently takes place, and the pus finds vent by several outlets, the patient being teased also with hectic and night sweats. Injections of a weak tincture of iodine thrown into the cavity have exerted a happy influence in some of these cases, promoting the healing process and allaying irritation. The joint, however, is incurably deranged, and continues so for life.

It not unfrequently happens in disease of the hip joint of a decidedly scrofulous nature, that the cartilaginous structure is destroyed by ulceration, and the hip is dislocated by a morbid growth in the acetabulum, as a consequence of which the limb may appear to be enlongated. Sometimes the action of the muscles draws the thighs upward and backward, and the limb is actually shortened. The child, in consequence of this deranged condition of the limb, and of his natural disposition to assume the most easy posture, after a time, which of course may vary very much, acquires a manifest distortion of the lower vertebræ, and a sinking of one of the shoulders, so as to give him the appearance of deformity. Nor does the mischief terminate here. The morbid taint in the system brings other parts, and especially the vertebræ, into the same diseased condition; and we then have some of the most unmanageable complications to encounter, and with no hope of relief.

All that can be done in these terrible invasions of the hip joint with positive deformity, is to make the patient as comfortable as possible, and to sustain the system by a suitable diet and regimen.

DISEASE OF THE SPINE.

Our remarks refer to morbid states of the parts of which the bony column, called the spine, is composed. It is not at all surprising that this structure should be the seat of inflammation, suppuration, ulceration, and caries. In scrofulous subjects, the tendency to such conditions is much more frequent than in those whose general health is sound; and, therefore, we hold scrofula to be an efficient predisposing cause, which will be aggravated and made more energetic by all those agencies that exert a deteriorating influence on the system. A trifling fall on the back or side, or even on the feet, which perhaps gives a strain to the ligaments, will suffice to develop disease in the spinal column of scrofulous children, even though there may be no very obvious manifestations of scrofula in the system. Even the gradual straining of the parts by long confinement on one side has been known to induce a carious state of the vertebræ. In all families in which this sort of disease has shown itself to be hereditary, it is perfectly obvious that the scrofulous diathesis is the secret source of the evil.

The early symptoms of disease in the spine, such as we are now talking about, are not unlike those which first appear in disease of the knee or hip. Pain is spoken of as felt in some spot of the column, and this varies as to its advance in different cases, increasing with great rapidity or very slowly. As the local disease progresses in the bony and cartilaginous structure, the perpendicularity of the spine is more or less impaired, and an early inclination to a curvature is sometimes perceptible.

At a very early period, in some instances, there is slight paralysis, both of the lower extremities and the bladder. The irregular movement and occasional tripping, even on a level spot, confirm the suspicions in this respect. After the lapse of several months, if recuperative means have failed to answer the end, it will be easy to detect a curvature of the spine, which may become much more apparent in a very short period. It is impossible to doubt that sad havoc has been made in the vertebral structure somewhere, and we soon find additional evidence of the extent of the mischief by detecting a tumefaction that warns us of the formation of pus, it may be, near to the spot of curvature, in the loins, or elsewhere.

Touching the management of these cases when the curvature of the spine is so obvious that none can mistake it, I refer the reader to the works on surgery; preferring to speak briefly of *preventive* management, and that *curative* treatment which may be happily applied before the curvature has actually taken place. These are the most important items in the practical history.

In respect of the preventive means which may avail to guard the spine from seizure, it is proper to say that they date far back in infancy. Especially is this remark applicable if the evidence of a scrofulous taint be clear. The most untiring vigilance should be directed, not only to the feeding and clothing of the infant, but to save it from the baneful experiment of teaching it to walk before nature intended it to crawl. Often have I witnessed the efforts of nurses to induce this premature and fatal reverse of the laws of our being. The spine is taxed severely by such attempts, and a debility induced which may remain. Of like injurious tendency are all the mad displays of recklessness, in tossing children into the air, and swinging them by a limb, to gratify an unmeaning and idle foolhardiness. Who can tell how many spines have been irremediably injured by such treatment of young children?

The tricks and freaks and cruelty of some schoolmasters have doubtless done serious mischief to the spines of delicate boys and girls; and in these, as in other respects, our youthful seminaries need reformation. Too long confinement in any position, at any study or task, is injurious to the system, leads to forced movements of the body to get relief, and so exert a pernicious agency. Frequent recesses in school are as certain to promote intellectual advancement as to favor physical invigoration. Far from wasting time, they put it to the best use.

The *curative* treatment, to be of much benefit, must begin early. The first monition of pain in the spinal column should be an alarm note, calling for immediate attention, especially if the constitutional or hereditary bias be unfavorable. Leeches should be applied to the seat of pain, and around it, and reapplied until the desired relief be obtained. And as the weight of so much of the frame as is above the seat of pain must necessarily increase the local inflammation, it should be removed by avoidance of the erect position. The patient should lie on his back, on a hair matrass, on a bedstead furnished with slats, so that the spine may be kept in its natural posture; and when it is desirable to change position, the whole body should be turned, so as to avoid anything like a twisting of the spinal column.

If there be reason to suspect that the leeching has not completely arrested the inflammatory process, it may be tried again, after the lapse of two or three days; and if doubt yet remain, let a fly-blister be laid on the spot, and the same be repeated in the next week, or followed by the ointment of tartar emetic, or the pustulating ointment before named. Let the counter-irritation be maintained so long as to make the work of restoration a matter of certainty, if possible, removing the last vestige of disease. During all this course of external management, it may be necessary to correct the bowels or the general system. If there be constipation or looseness, both should be properly corrected. If the patient be very feeble, a tonic plan should be pursued, both in respect of medicine and diet. If a scrofulous diathesis be suspected, iodine, in some form or other, will be indispensable. If this diathesis co-exist with debility, the iodide of iron will be a proper medicine, in the doses already indicated.

I have not a doubt that the faithful observance of the plan here prescribed, at the earliest period in the cases, would put a stop to the local inflammation, prevent ulceration and caries, and consequently secure the spine from deformity. But if the case be neglected, or the means be imperfectly applied, or for too short a period, the disease, though checked, it may be, will recur with augmented force ; and then, if the life of the patient be saved, he will not escape deformity entirely.

It sometimes happens that professional aid is not sought until the spinal column has been distorted, and then the course of procedure will be different from that described above. We cannot now arrest inflammation, for that has terminated in disorganization already, to a certain degree, and the most we can do is in the way of counter-irritation to limit the extent of the mischief. To this end we direct the horizontal position, and establish an issue or drain on either side of the spinal column, near to the affected part. This is done by the agency of caustic potash, which may be confined to a given spot by means of adhesive plaster, spread on leather, laid along the spine, a hole having been previously cut in the leather as large as half a dollar. The open space in the leather is then filled with the caustic paste, and a piece of the adhesive plaster laid over to confine it. In half an hour or so the eschar will be found to be complete, and may be dressed with a soft poultice until sloughing takes place. An ulcer is thus formed on each side of the spine, which may be daily irritated by a touch with the caustic, so as to insure a free drain from the parts. I have witnessed very obvious improvement in cases of this nature, in a day or two after the formation of the caustic issues. They should be continued in the suppurative state until permanent relief is secured.

Should an abscess point at the dorsal or lumbar region, by reason of cellular connection with the suppurating vertebræ, it will be necessary to make a valvular opening large enough to permit the escape of the matter, and after its evacuation the aperture should be closed and dressed with adhesive plaster, compress and bandage.

The complication of scrofula with debility in a case of this kind calls for the iodide of iron, with generous diet; and if sea-bathing and a residence at the sea-side could be enjoyed, the probabilities of relief would be increased. The caustic issues being in full action all the while, the morbid process in the vertebræ is arrested, and anchylosis ensues; after which the patient, although somewhat deformed, may enjoy a reasonable share of health for many years. The drain from the sides of the spine should not be allowed to dry up rapidly, but the very reverse.

SPINAL MENINGITIS.

THIS disease has been called *medullary meningitis*, *cerebro-spinal meningitis*, *inflammation* of the *membranes* of the *spinal marrow*, &c. &c. A disease undoubtedly of this nature has been fully described by Grisolle. Mayne and Darby have also furnished cases of it in the *Dublin Journal* and *Medical Times*, as have Rilliet, Gilkrest, and Bennet, in other foreign journals. Drs. White, Dickson, Phillips, Ames, and Stone have also described it as seen by them in various sections of our own country. The disease has prevailed as an epidemic, although it is more frequently sporadic.

The *period of life* when this disease makes its appearance is a point that requires to be settled. Mayne and Darby teach that from ten to twelve years of age is the most common period, and that boys are the most frequent subjects. Coley says it attacks from the second to the twelfth year of life; and I am inclined to think that even younger children are sometimes its victims. The boys seen in Ireland were in poor-houses. In France, the subjects were the youngest conscripts just added to the army list. Two female cases are reported by a writer, who gives the ages as seventeen and thirty-six.

From a statement by Sir George Baker, in 1782, of seventy-three children in a public asylum, not less than nine were seized suddenly and violently in such a way as to induce the belief that the disease was cerebro-spinal meningitis, although no intimation is given to that effect in the paper referred to. The disease was probably well treated, as the patients soon recovered. (See *Medical Facts*, vol. iii.)

Influence of season.—The cases on record, for the most part, occurred in winter. The only case I have ever attended was in the winter season, and the patient was a lad.

The *causes* usually assigned, in addition to age and season, are deteriorating in their agency, and therefore calculated to augment the power of what I hold to be the grand secret predisposing cause, viz., the scrofulous diathesis. Long-continued and enervating exercise is named as a cause. Poverty, want, and bad living, frequent vicissitudes of weather, all agents that greatly depress the mind, are among the causes.

The *pathology* is confessedly obscure. The name indicates inflammation of the membranes of the spinal marrow, and dissection has revealed such a condition. Sometimes a congested state of the vessels has been detected, the pia mater being obviously congested. In some cases, very little morbid alteration could be seen. Yet it is fair to infer that the disease is originally inflammatory. The fact that effusion of serum was noticed in a dissection made by Dr. Darby, in Ireland, is confirmatory of this inference.

Symptoms.—The most remarkable feature is the suddenness of seizure. The cases seen by myself and others in the same vicinity were of this kind. In several cases recorded by Darby, the boys had eaten heartily and retired to rest, when the disease suddenly assailed them. In some, it began with severe retching and vomiting or purging. In the worst cases, the patient soon fell into a state of collapse, the extremities quite cold, the surface blue or livid, the pulse nearly gone, and the whole aspect something like that of Asiatic cholera. After the lapse of two or three hours, reaction took place, with the development of a peculiar pathognomonic feature, viz., tetanic spasms. The muscles of the neck and back presented obvious rigidity, the head being drawn back towards the spine and firmly fixed in that position, so that the patient and his attendants were unable to move the head forwards. The countenance exhibited a decidedly tetanic aspect, attended with twitching of the muscles of the face. Presently the patient loses control over his extremities, and is unable to stand. The pulse rises to 120, and even to 140, and maintains that elevation for hours. The stomach is sometimes very irritable, and there is decided tenderness at the epigastrium. The skin is hot, and the thirst very urgent. If the patient be not relieved, general convulsions assail him, so severe as to require several persons to hold him; or he is found to be comatose, and with great difficulty roused. If roused, he will make some sort of answer, and fall again into the same lethargic state. Presently he is unable to swallow, loses all consciousness, has involuntary discharges, and sinks rapidly.

In several of Darby's cases, in addition to the tetanic spasms, the patient plunged violently, so that he became almost unmanageable. In a very few cases, the symptoms were mild.

The Treatment.—From what I have seen, I feel inclined to believe that recovery, under what has been the most successful treatment, has something to do with the scrofulous taint already hinted at. Where that taint is absent, bleeding and calomel are the best means we can employ; if it be present, they may possibly increase the malignity of the disease.

Darby details the case of a lad aged twelve, who was employed in carrying messages. He was attacked very soon after eating, and in less than an hour was comatose. He was bled to twenty-four ounces, and consciousness returned. He complained of cephalic and abdominal pains, for the relief of which a large dose of calomel was administered, which acted smartly on the bowels. On the next day, he was convalescent.

Another lad of the same age was seized suddenly and with great violence. In an hour from the moment of attack he was unable to speak, ground his teeth, had tetanic spasms, which forced his head towards the spine, and he plunged violently. He was bled to twenty-four ounces, and fainted, and a full dose of calomel was exhibited. In less than one hour after the bleeding he was as violent as before. The vein was again opened, and nine ounces of blood were drawn. This had the effect of subduing the violence of the symptoms. Subsequently, leeches were applied to the head and neck, followed by blisters. A grain of calomel was administered every hour, followed by mercurial friction. The patient, notwithstanding, died.

A boy aged eleven was seized with severe headache, gastric pains, vomiting and purging, and soon became comatose. All the symptoms yielded to free bleeding, and large doses of calomel. Three boys, aged eight, nine, and ten, were attacked with severity, and all recovered after full doses of calomel and the use of the warm bath.

Some of the writers speak of cases vigorously treated that ended fatally in fifteen hours, but the greater number terminated on the fourth day, while a few were protracted to two or three weeks. And although the patients were over nine years of age, I have no doubt that the same disease attacks much younger children.

The American physicians named speak of petechiæ as an occasional feature of the disease. They speak of the duration as extending from five to thirty days, and that no sort of treatment availed.

M. Bisseron, who saw a number of cases in Algeria, finding all ordinary means to fail, resorted to the inhalation of sulphuric ether, and thereby saved eight patients.

In view of all that is known touching this very severe disease, I have reached the conclusion that bleeding and calomel are the most reliable helps in the treatment. These should be aided by ice to the head, and minute sedative doses of tartar emetic. Blisters to the entire length of the spine, and extract of belladonna to the raw surface should also be resorted to. And in respect to the inhalations of ether and chloroform, there is every reason to believe that they may be useful. They are certainly justifiable in a disease of such severity and so generally fatal.

SPINA BIFIDA.

This term indicates a split in the spinal column, but may refer to any deficiency of the bony structure at any point. The most common location, however, is in the posterior portion of the lumbo-sacral region, presenting a partial or total want of the spinous processes. To account for the deficiency, various conjectures have appeared, which are, of course, mere speculations. A sac is always to be seen or felt, containing a fluid, which may be in the arachnoid, or between it and the spinal cord.

The lump or tumor is of very variable size, being as small as a nutmeg, or as large as an orange. The immediate covering is sometimes so very thin as to make the whole mass transparent; and occasionally it presents the appearance of a fungous growth. External pressure causes the recession of the tumor, but this is apt to be followed by convulsions. The disease not unfrequently attends the hydrocephalic enlargement of the head.

Death from this disease occurs in early infancy, for the most part, either by sloughing of the integuments or by a sudden, accidental opening. Occasionally, the sides of the sac acquire considerable firmness, and the patient may reach maturity. This will be found to occur in those constitutions in which there is little or no scrofulous manifestation.

The *treatment* is purely mechanical, so far as the mere lump is concerned, and cannot avail in a decidedly depraved constitution. A mere puncture, with subsequent pressure, has been successful; and it has been fatal, too. The *London Lancet* furnishes cases in point. In the *Gazette Médicale*, one or two cases are recorded, of permanent cure by the excision of the sac and the application of harelip pins to unite the parts. This is a bold and exceedingly hazardous experiment, which is not likely to be repeated by young practitioners.

The safest practice, and I doubt not the most frequently successful, consists in pressure, very gradually made at first, and persistently maintained. The mechanical agency so applied may induce inflammation enough to insure the filling up of the bony defect, thus rendering the cure perfect. It may be well, in cases of debility and scrofulous manifestation, to put the child on the use of small doses of the iodide of iron, to be continued for weeks or months, with occasional intermissions of three or four days, and at the same time to advise a generous diet and sea bathing.

HYDROCEPHALUS EXTERNUS.

The hydrocephalic head may be congenital, and of so moderate a size as not very seriously to embarrass delivery. In these cases, the enlargement often advances very rapidly in the early months of infancy, and assumes a frightful aspect. The disease has been called *chronic* hydrocephalus, because the acute form of the disease, treated imperfectly, sometimes persists in its mischievous course, and leads to the external manifestation, to which the term *hydrocephalus externus* has been applied.

Not only are the cranial bones found in a detached state, in congenital cases, but equally so when the disease has had a later origin, and after a bony connection had been established. Mr. Ford records the case of a child nine years old, in whom the bones of the head did not completely separate until six weeks before death. The bony separation is manifestly the result of the mechanical action of the effused fluid, which must have sufficient room, and compels even the bony case to yield.

In some instances, the post-mortem examination has shown a total absence of the brain as such, a mere sac or bag being left, nearly as thin as paper, from which the fluid gushes forth as soon as an aperture is made. This result led to the conjecture that the brain was wholly lost. The late Professor Wistar was in the habit of relating the particulars of a case of this kind to his anatomical class, and he affirmed that such patients, even to the day of death, evinced evident marks of intellect. The unavoidable inference was that brain enough, or a substitute for it, remained in the sac, to be a basis for some degree of mental development. I have seen a remarkable case, in which the patient evinced a good deal of sprightliness.

The enlargement or distension of the cranium is not alike in all cases, either in point of size or in respect of its seat. Sometimes the protrusion of one side is much more palpable than that of the other. Even the bones of the internal ear have been detached from each other, and total deafness has resulted.

The subjects of this disease live occasionally much longer than we would be inclined to think. I knew one to live sixteen years, and have heard of another whose life was protracted to twenty-four.

The Treatment.—Internal medicine can do nothing or very little for cases of this kind. Apart from the cephalic enlargement, the general health is sometimes very good, with the exception of occasional convulsions. Cases are reported as cured by puncturing the sac, but the same device has killed instantly. The puncture is to be made so as to form a kind of valvular aperture, and thus to insure a gradual evacuation. This is followed by a bandage, carefully adjusted, so as to make equable pressure. Some have preferred to apply strips of adhesive plaster in various directions first, and then to use the bandage. In the *American Medical Recorder*, vol. v., a case is reported as successfully managed in this way.

ENLARGEMENT OF THE TONSILS.

The tonsils may sometimes embarrass deglutition and the voice, by reason of their preternatural enlargement; and when thus enlarged, they may be very annoying, because of an intensely fetid quality imparted to the breath, in consequence of deposits upon and in them.

We find these enlargements sometimes after an attack of cynanche tonsillaris, for which the treatment may have been too feeble, or because of a peculiar tendency in the system to establish such growths. This is seen especially in those of a scrofulous habit. In persons of this description, too, we find enlarged tonsils that have no relation to an attack of quinsy, but which seem to come spontaneously. I have met with the latter frequently in persons annoyed by a protracted cough, unrelieved by the usual expectorant treatment, and cured only by right adaptations to the case when its real nature was ascertained.

In some persons, we find the enlargement on one side only, while in others the passage is almost blocked up by a protuberance on either side. Repeated attacks of quinsy, leaving the tonsils enlarged at each visitation, finally induce a bulk that is so embarrassing as to require relief by a surgical operation, or in some other way.

Touching the modes of exsecting, or taking out the tumors, it is not my province to speak, as that belongs especially to the surgeon. But, as the experience of modern practitioners abroad is not in favor of a surgical operation, save in rare cases, but decidedly in favor of persistent medical treatment, it is my purpose to notice that particularly. It is now urged that the daily application of lunar caustic for two, three, or four months will entirely control the enlargement of the tonsils; and it is alleged that the failures have resulted from a want of perseverance. There are patients who have so much repugnance to any sort of surgical operation that they will not submit to the knife or the ligature, and yet they will consent to the protracted employment of the caustic. (See *Ranking's Abstract*, No. 7, page 70.) In many cases of this kind, it will aid considerably to keep the patient on the use of small portions of iodine or the hydriodate of potash.

The cough to which reference has been made, as associated with enlarged tonsils, may often be arrested by the caustic. I have known young females of a scrofulous habit to be very much harassed with cough, whose entire source was in the irritation of enlarged tonsils set up by sudden changes of weather acting on the scrofulous diathesis. When I began to manage such patients, I found that pectorals and opiates failed, excepting as mere temporary expedients; and a little experience satisfied me that a few touches with a strong solution of the nitrate of silver met the case better than all other devices. It is conveniently introduced on a small piece of sponge securely fastened to the end of a strip of whalebone. In five minutes after the application, the tonsil will, sometimes at least, be reduced to half its former bulk. The mass is evidently spongy, and readily contracts.

In *Braithwaite's Retrospect*, part nineteen, page 350, we are cautioned against excision. "Do not exsect the tumors," says the writer, "but administer small doses of calomel and colchicum for a few weeks, and an improvement will soon appear." It is further asserted that the tumors are very apt to subside as puberty comes on.

The *fetid breath* to which reference has been made is sometimes misapprehended, and erroneously associated with disorganization of the lungs. The latter cause may induce the same result; but we intend at this time to point to the tonsils as a source of the difficulty. There may be some enlargement of the tonsils, yet not so as to be inconvenient by bulk; and they may have the spongy quality in a remarkable degree. I have seen the tonsils thus morbid covered over with a soft cheesy-looking matter, easily removed by a spatula or swab. The same kind of substance finds a lodgment in the follicles and interstices of the tonsils, and becomes putrescent. Thus, an ample focus is constituted for the development of a fetid breath; and such is the reality in not a few instances in quite young children and in older subjects.

The *treatment* is sufficiently obvious. The tonsils must be entirely cleaned of the adherent matter; and this can be accomplished with a soft sponge or old linen in the shape of a swab, or even by a spatula. The particles retained below the surface require something more, such as the antiseptic and disinfectant gargle of the liquid chloride of soda, made of a drachm or two of the liquid added to four or five ounces of water. The strength of the mixture may be gradually increased; and the gargle should be used at least five or six times daily.

In some cases, especially if there be gastric derangement, the employment of the gargle should be preceded by an emetic of ipecacuanha, or a dose of calomel and ipecacuanha large enough to act freely. The efforts at vomiting will have the effect of cleaning the tonsils, partially at least, and will make the cure more perfect. Should it not be necessary to exhibit ipecacuanha, it will be proper to direct a teaspoonful of finely-powdered charcoal to be taken twice a-day in milk or sweetened water. This will prove antiseptic, and will exert a good influence on the bowels.

CANCRUM ORIS.

This and other names have been assigned to a most destructive disease that invades the mouth, the cheeks, and even the bony structure, creating terrible deformity, and frequently ending in death. Though seen occasionally in insulated cases, here and there, doing its work of disorganization, it is in asylums for children that its ravages are most striking and frightful. It is pathologically, an inflammation terminating rapidly by ulceration and gangrene.

The *causes* have been matter of controversy. The very indiscriminate and sometimes too liberal use of mercurial medicine in the treatment of children, prepared the way for the general denunciation heaped on calomel as the prolific source of all the mischief; and there are those who now believe that this is the veritable source of the evil. Nor are we about to assume the responsibility of asserting that calomel never has been at fault in this respect, for we really think that its injudicious administration has sometimes, at all events, been so deleterious as to lead to the result now under consideration. But I am equally confident that the disease has been manifested and has progressed to a fatal issue without any sort of dependence on mercurial action. A depraved, vitiated condition of the system, continuous bad living, unwholesome food, impure locality, any taint of constitution inherited or acquired, may and often does induce the condition of the mouth, cheeks, &c., to which we are now directing our remarks. When a case occurs in a hospital for children, sustained as a sort of poor-house on the public funds, such are the deteriorating influences at work there that the children acquire a predisposition to be seized with the new morbid visitant. Two-thirds of the inmates and even a larger proportion will be attacked, so that the disease may be fitly styled an epidemic.

A partial operation of the influences just named on a scrofulous child in a private family might ensure like results; and if calomel had been administered at all, its agency would most likely aggravate the progress of the case and make a fatal termination more certain. Such are our views of the mercurial question touching cancrum oris.

In its earliest period, the disease may seize only a spot here and there of the mucous membrane of the mouth, and it may be treated as a trifling aphthous affection of no moment. But the progress is rapid and terrible, and the destruction of parts ruinous.

In the Children's Asylum, located in Southwark, some thirty years ago this disease made sad work with the little inmates, but was finally controlled by the unwearied efforts of Dr. B. H. Coates, who was then (as was the writer) one of the attending physicians. The tour of duty of Dr. Coates occurred just at that time, and the cases consequently fell into his hands. The prescription which appeared to be most salutary was thus:—

℞.—Cupri sulph. ʒij;
Pulv. cinchon. ℥ss;
Aquæ ℥iv.

The mixture thus made was applied several times a-day to all the excoriations and ulcerations, and the patients were allowed to swallow a little.

A late foreign journal speaks in very high terms of commendation of the actual cautery applied to the ulcerated spots, to set up a new and more healthful action. This merely local remedy, however, will not avail, unless some proper general means be resorted to in order to rectify the errors of the constitution. And this leads to the remark that no medicine has been devised so well calculated to exert a favorable influence on the entire system as the *chlorate* of potash. Some of the books erroneously speak of this as the *chloride* of potash; the article is the same with that so often employed in chemical experiments to form explosive compounds, and also to make pure oxygen gas. We are indebted to Mr. Hunt, an English surgeon, for the successful introduction of the article in the treatment of this formidable affection. It would seem to be a very safe medicine, since it has been given in quantities varying from one to five scruples in the course of twenty-four hours. Dissolved in sweetened water, it is readily administered to the youngest children. Fondness for the chemical philosophy in accounting for the salutary action of medicines, led to the conjecture that the chlorate was useful by reason of its high oxygenating power; but this is only a conjecture. The hydriodate of potash should be administered in cases that are manifestly scrofulous, at suitable intervals.

SCORBUTUS.

The disease called *scurvy* is not restricted to adults. At sea, it has assailed indiscriminately the young and old, and in its visitations on the land it has been equally unsparing. It is no unusual thing, moreover, to meet with really scorbutic affections in young persons of both sexes, located especially in the gums and tonsils. I have found these local manifestations of the disease most frequently in the persons of young girls, whose constitutions bore marks of a scrofulous taint, that could not escape the close observer.

Regarding scurvy as a disease of the general system, it is not needful to attempt to assign any sort of local pathology in the premises.

The *causes* of this malady are confirmatory of the position that the disease involves the whole system. We might pronounce them in a brief phrase, viz., deficiency or absence of fresh animal and vegetable food. As proof that this summary is correct, we may observe that the disease has rarely if ever been absent from a vessel whose voyage has been unavoidably prolonged, with no means of obtaining fresh supplies. Confinement to one and the same diet, and that an inferior kind, for a longer space than six weeks, is very apt, according to Sir Gilbert Blane, to induce scurvy. The officers may escape, because enjoying better fare. But the crew subsisting all the while and wholly on bad provisions, it may be, cannot escape. All the circumstances within and around them tend to make the matter of diet a more serious evil. The nutrition of their systems day by day, and the re-supply of blood to the original fountain, is made of spoiled or unsuitable materials. If the vessel be a passenger conveyance, there may be twenty or forty children on board, all partaking of the same short allowance of bad food, if the voyage be a very protracted one. The unavoidable consequence is a deteriorated blood and a deteriorated system. Can a healthful influence flow from such a source?

The graphic testimony of Roderick Random is well calculated to instruct us, in respect of the causation of this disease. "The provision consisted often of putrid salt beef, which the sailors called *Irish horse*, to which was added some salt pork and musty bread. The whole came from New England. The pork was neither fish nor flesh, but savored a little of both, though far worse than either. The biscuit seemed to be a kind of clock-work, moved by its own internal impulse, caused by myriads of insects within." Such is the description in part of sailor's food as it has been, and yet is occasionally. And is it astonishing that scurvy or something equally morbid should be the product of such causes? The blood is just what the food makes it; and the vital fluid must part with its vitality, just as the elements of death are blended with it.

In the seventeenth century, scurvy was very fatal in the city of London among the lower classes, whose habitual fare was of the worst kind, embracing spoiled bread and spoiled meat. The same causes yet operate more or less extensively in all large cities, and hence scurvy will not cease to be a disease of childhood as well as of adults.

Salt has been placed among the causes of scurvy, as, we think, without sufficient warrant. Many persons who consume a great deal of salt never show a sign of the disease; and, moreover, it has appeared in the total absence of salt. The want of sound and good animal and vegetable food does the mischief, when that deficiency is continued for weeks or months.

Sedentary habits and a bad locality conspire to augment the morbid tendency of unwholesome food. Captain Cook declares that the natives of Kamtschatka never have scurvy, although their diet is exceedingly crude and the improvements in cookery unknown to them. But they labor constantly and industriously in the open air, and so compensate for defective diet. On the other hand, the Cossacks in garrison, feasting to gluttony on substantial food of the best kind, are sometimes seized with scurvy, because their indolent habits and excesses of various kinds defeat the legitimate tendency of a wholesome fare. And for like reasons it happens that sea scurvy is more malignant than that seen on shore.

The *symptoms* of confirmed scurvy are almost as varied as the organs and tissues. A peculiar bloated appearance of the whole frame, marked with petechiæ, large or small, strikes the beholder at the first gaze. The gums are evidently spongy, bleed almost at the touch, project over the teeth as if detached, and emit a very offensive smell. Sometimes the teeth fall out, the gums are prodigiously swollen, and have a livid aspect indicating a very languid state of the circulation. Ulcers are found on different parts of the surface, manifesting a great deficit in vital energy, and liable to become gangrenous under continued pressure. The limbs swell, show livid spots in various places, and these very painful. An old sore or a fracture, healed months or years before, is now renewed, the bond of continuity being severed by the deteriorating force of the morbid action pervading the whole system. Even the vision does not escape, as it happens now and then that the patient is partly or entirely blind as soon as night sets in. The *pathology* has been already hinted at. The texture of the blood is altered; the affinities which bound its elements together are broken up. A deficiency in the fibrinous element is manifest, and a marked tendency in the whole to actual putrescence. The *treatment* is in a very important sense *preventive;* and if this were fully carried out, we should not be troubled with scurvy as an evil to be met by medical skill. The grand reason why this disease is so rarely named in connection with long voyages at present, is the care to supply our ships and other vessels with the right kind of provisions. The portable soup, the sourcrout, the potatoes, the acid pickles, the lemon juice, and citric acid, the sound animal food, with kindred articles, constitute the basis of a salutary prevention. These, combined with all practicable exercise, rigid cleanliness and constant ventilation, make the inventory whose worth is now appreciated throughout the civilized world.

The diet and regimen just named will not only prevent the disease, but they will as certainly cure it. Dr. Foltz, who has had a good deal of experience in this respect, says starch and lemon juice alone, aided by plenty of good water, cleanliness and cheerfulness, will prevent and cure the disease most certainly. (See *Braithwaite*, No. 18.)

It is astonishing how promptly the system begins to recuperate under the use of fresh vegetables, or even old but sound potatoes, and lemon juice. This combination will banish the disease speedily and for ever. Even two or three tablespoonfuls daily of good lemon juice will bring about a visible change in a week. The juice requires a little care for its preservation, and should have a tenth of its bulk of brandy or alcohol added to it, and should be kept in sealed bottles. The solid citric acid, which is the best substitute, is not so good as lemon juice, although much easier preserved and carried about. It lacks the vegetable mucilage of the juice, which, according to Sir Gilbert Blane, increases the antiscorbutic quality.

Every ship should have the one or the other, or both. The acid is readily dissolved, and may be substituted by tartaric acid, or even good vinegar, if need be.

No vegetable is more valuable in this relation than the Irish potato. The facility of their preservation adds to their real worth.

The fact that they contain a considerable quantity of acid, while they furnish an agreeable article of food, renders them indispensable. Some writers who have had large experience in scurvy at sea speak of the potato in terms almost extravagant. They may be cut into slices as needed and eaten with vinegar, or they may be preserved in vinegar as pickles usually are kept.

In addition to the salutary action of lemon juice, when taken by the mouth, we must add its excellent effects as an application to scorbutic ulcers. The juice itself may be applied on lint, or the lemon may be cut into thin slices and these laid on the sores. A healthful action is almost instantly induced, and the healing process accelerated. There is no application so suitable to the gums as lemon juice, whether in scorbutics at sea or on land. The swollen and bleeding and burning gums met with not unfrequently will be relieved, as I well know, in a few days by the sucking of a lemon frequently through the day. When the disease is found in a scrofulous system, in addition to the lemon juice I direct the iodide of iron and the hydriodate of potash, in small doses, for a week. If the foul smell be not removed by the use of the lemon juice, let the gargle and wash of the diluted liquid chloride of soda be employed five or six times a-day.

In view of the prompt and salutary action of acids in the management of this disease, some persons have designated it a *chemical* disease. Nor is it without a show of reason that this appellation has been given. The speedy operation for good would seem to indicate a real chemical change; and yet this is not demonstrated. We do know, certainly, however, that the disease is one of universal deterioration, both of solids and fluids, and the diet and regimen spoken of do most certainly rectify the disordered and depraved condition. We give but little medicine here, in the usual sense of the term, and our reliance is almost exclusively on the right kind of diet.

HEMORRHAGES.

Discharges of blood from various parts of the economy are by no means confined to puberty or to middle age. We meet with them frequently in quite young children, and in youth at all periods up to puberty. In not a few instances, the readiness to bleed from the slightest cause makes it abundantly manifest that the hemorrhagic diathesis of the older writers is not a creature of fancy, but a veritable reality.

The old division of hemorrhage into active and passive, acute and chronic, high and low, sthenic and asthenic, applies to all ages, and is just as correct now as at any former period.

The diathesis named, when manifest, calls for special care, as its removal is the surest guard against future attacks of bleeding. This may be accomplished by any means that will fully correct the general system, subduing any obvious fault that operates to vitiate the whole economy. When it is seen that a scrofulous taint is present, it will be needful to employ the iodine treatment in some shape or other. And when a general debility of the system is detected, besides an invigorating and tonic course, it is useful to put the patient under the influence of the spirit of turpentine, for some weeks, intermitting the dose occasionally for two or three days. The dose may vary from three to ten drops four or five times a-day on sugar or in syrup. This was a favorite practice with the late John Hunter, and very efficient.

We propose to notice several kinds of hemorrhage, as we meet with them in various parts of the system, such as *epistaxis*, bleeding from the *air-passages* and *air-cells*, from the *stomach* and the *bowels*, and from the *urinary bladder.*

Epistaxis, or bleeding from the nose.—This is so frequent in young persons of a full habit that it excites little attention. Many regard it on the whole as a sign of vigorous growth, and hence are not troubled about it. Indeed, it may be and sometimes is a salutary effort of nature, and the system is the better for it. When it occurs frequently, and with the effect of enfeebling the system, it most probably depends on the hemorrhagic diathesis, and then calls for special care.

Epistaxis may come on under various circumstances. Not unfrequently there is no premonition of its approach, and this may be the case in a dozen attacks. But it is often ushered in by repeated transient or fixed pains of the head, the face being highly flushed, the temporal artery beating smartly, and the pulse at the wrist having a corresponding activity. Occasionally the blood seems to have been driven from the extremities to the head, as the hemorrhage is preceded by a very cold state of the feet and ankles, and with more or less shivering of the body.

The *treatment* of epistaxis is general and local. If the hemorrhage be of an active character, or be repeated too often, even in a plethoric habit, the antiphlogistic plan must be pursued. One of the most certain modes for arresting the discharge is to open a vein in the arm and detract a few ounces of blood. This is far less troublesome than a resort to leeches, and less expensive. If we doubt the expediency of venesection, a few leeches may be applied to the temples. It is of great importance to keep the patient quiet and cool, and in a well-ventilated room. All the drinks and food should be taken as cold as practicable, and no sort of stimulus allowed. Ice applied to the nape of the neck and on the head is often beneficial.

The bowels should be kept free by the use of the saline cathartics; and small doses of the nitrate of potash and tartar emetic, or even digitalis, may be called for, if the bleeding seem disposed to persist after the use of the lancet or leeches. A sixteenth of a grain of emetic tartar and three grains of nitre may be given to a child six years old, three or four times a-day. It is hardly ever proper or needful to administer any sort of astringents in this active state of epistaxis.

But if the patient be already feeble, and especially if the discharge depend on the faulty diathesis, we then have the passive state of hemorrhage to contend with; and here the remedies will be of a different kind. Various astringents may be resorted to, both by the mouth and to the nostrils, such as the sugar of lead, alum, sulphate of zinc, gallic acid, and the like. John Hunter's favorite remedy, the spirit of turpentine, in doses of from three to ten drops, every two hours, may be administered. In all cases, whether active or passive, it is desirable to keep the patient in an erect position, to have the benefit of the law of gravity.

Hemorrhages from the air-passages and air-cells.—We notice next that variety of hemorrhage in which the blood issues from the air-passages and air-cells. And it is proper to remark that the discharge may come either from the mucous membrane of the air-passages or from that of the air-cells separately, although it may flow from both at one and the same moment. In the former case, it is not necessarily a very dangerous malady; whereas, in the latter, the profuseness and sudden manner of the discharge may render it fatal. The color of the expectorated blood is florid, and it is at the same time frothy. A tickling sensation in the throat attends its discharge; the pulse is quick, and the patient complains of some heat in the chest. We find this bleeding from the air-passages in young persons between the ages of nine and twenty-five; but more frequently at that period of life in which the chest undergoes most expansion, or "spreads out," as some have it. The delicate lining membrane is liable to rupture, and in that act some very minute vessels are torn, and their contents slowly discharged.

This kind of hemorrhage may be confounded with bleeding from the stomach. The latter, however, almost always occurs later in life. The blood that is ejected from the stomach, after having been actually discharged into that organ, is black blood. It comes either from the veins of the stomach, or lies in that organ for so long a period after its escape from the bleeding vessel that it acquires the dark color of venous blood, and it is, moreover, in clots. In addition to this, if the blood be poured out from gastric vessels, we detect more or less of it in the fæcal discharges; and if the patient vomit, we find plentiful traces of dark-colored blood in the ejected matter. In all cases of gastric hemorrhage, there is also much precordial uneasiness, and fullness about the stomach and liver. Now, in hemorrhage from the lungs we have none of these symptoms. The color of the discharge is, as we have said, florid, always so; and instead of being blended with food, it is mixed with air, so as to be decidedly frothy. Moreover, we have in this case pectoral symptoms, which are absent in hemorrhage from the stomach. There is no inclination to vomit, nor even any considerable degree of nausea, but the patient complains of stitches in the side, has some tickling in the throat, and more or less cough as a consequence.

Attentive observers have detected this kind of hemorrhage most frequently in persons inclined to consumption, who have a delicate soft skin, very soft hair, and what is called a sanguineous temperament. Yet it is not confined to persons of this description. In some instances it accompanies inflammation of the lungs, and seems to be an attempt of nature to relieve herself. Children under ten years of age are liable to it.

The *causes* of this hemorrhage are various, and sometimes we fail to detect any cause. The common causes of inflammation may give rise to it, and they do. It may follow a blow on the chest, or it may be occasioned by a severe cold. Violent exercise that shocks the whole frame may, in persons predisposed to pulmonary disease, give rise to this sort of hemorrhage. Some persons have repeated attacks at intervals, and the local debility thus induced often lays the foundation for true pulmonary consumption. And yet we meet with hale and vigorous men who in early life had frequent attacks of bleeding from the air-passages. It is certainly, however, the duty of all persons who are thus attacked to avoid every source of irritation in the chest, and especially to beware of exposures to sudden changes of the weather, transitions from heat to cold, &c. When blood is actually in the air-passages, we detect the sibilous and also the sonorous rattle, if we apply an ear to the chest.

If persons affected with this kind of hemorrhage die of other diseases, and are examined after death, we find nothing to account for the bleeding, and are convinced that it was nothing more than a kind of secretion from the surface of the mucous membrane.

But there may be hemorrhages that do not come from the membrane in this way, but from vessels actually ruptured in the air-cells; and then the discharge is often profuse and sometimes speedily fatal. In the cases of this kind of hemorrhage that do not soon destroy the patient, we discover after death very considerable structural derangement.

Portions of the lung are found to be quite hard and dark-colored. Sometimes hard patches may be felt almost like nuts embedded in the substance; and, if we cut into them, they are very red, and are sometimes taken for circumscribed inflammatory tumors. All such portions of lung are not only very hard and dark-colored, but they fail to crepitate or crackle under the fingers.

If we cut into these apparent tumors, we discover a granular structure, around which the lung is perfectly sound. The case has been originally a violent ecchymosis, not into cellular structure, as we see on the surface, but into the air-cells. In all such cases before death, blood is copiously spit up, and this unquestionably comes from the air-cells. If the blood were only in the cellular membrane and not in the air-cells, it could not be expectorated at all.

This hemorrhage is known by the title of *hæmoptysis*, which means simply a spitting of blood, and is equally applicable to the hemorrhage from the air-passages. In both cases, there is more or less local irritation; and hence, besides the bleeding, we have cough, difficult respiration, heat in the front of the chest, flushed face, and, after the disease has continued for some time, paleness of the face and a tickling sensation in the bronchial tubes. Indeed, as all these signs are present in hemorrhage from the mucous membrane of the air-passages, as well as from the air-cells, we cannot certainly tell whence it proceeds, unless the discharge be very copious; then we know it comes from disease of the air-cells. Ten pints have been discharged in such cases in forty-eight hours. Laennec notices a case in which thirty pints were lost in fifteen days.

But there may be a true and even fatal hemorrhage from the air-cells, and yet almost no external hemorrhage be obvious. The blood is effused copiously into the air-cells, so as to produce engorgement; but it coagulates and gives rise to hard lumps. But sometimes the effusion is still greater, the substance of the lungs being stuffed with blood, partly solid and partly fluid, though little has been thrown up. It is to this kind of hemorrhage in the lungs that the term *pulmonary apoplexy* has been applied, by Laennec. A more unwise, unphilosophical name never was adopted. It is peculiarly unfortunate. Long before its introduction, a fellow-graduate of mine, who wished to appear very smart when under examination, replied to a question from Dr. Rush, "What do you understand by a scirrhus of the uterus?" "Why, sir, I should say it was an *apoplexy* of the uterus." The faculty laughed heartily, and the joke passed off. Now, the term apoplexy has no relation whatever to the actual pathological state of any organ, but serves to designate the personal posture or attitude of the patient. It means to seize suddenly, or strike down, and is, therefore, somewhat applicable to those who are the subjects of apoplectic fits. I have been in the habit of making remarks of this kind, for many years, and was glad to find that Dr. Elliotson noticed the abuse of the term in a manner equally decided. "Apoplexy," says this author, "is not a state of parts, but a loss of sense and motion, caused by pressure on the brain, occurring, for the most part, suddenly. Nothing of the kind happens in hemorrhage from the lungs, and therefore the term *pulmonary apoplexy* is exceedingly absurd."

The case of sudden and fatal effusion into the lungs without expectoration of blood was not noticed by the ancients. Three cases were detailed in 1816, to the French Academy of Medicide, and since then they have been more frequently before the public. The lungs were found distended with dark-colored blood, partly coagulated, and partly fluid, and seemed to be too large for the chest, by reason of over-distension. The cases appeared to depend on laceration of the vessels, and death seemed to result from the effects of internal hemorrhage, and oppression of the lungs, induced by the copious effusion of blood.

Sometimes the effusion of blood into the cells and substance of the lungs becomes solidified in lumps, without bloody expectoration. The internal effusion is renewed, and the blood accumulates without hardening, and a sudden gush of blood from the mouth speedily exhausts the patient. These cases are not unfrequent. One of the kind is recorded by Elliotson, very minutely.

The hemorrhage from the air-cells is much less manageable than that from the mucous membrane of the air-passages; hence it is important to distinguish between them; and this may be done by means of the ear. In the former—that is, hemorrhage from the air-cells—if there be but a small effusion, there is a crepitous rattle, because air and blood are present. In hemorrhage from the mucous membrane lining the tubes, we have no crepitous rattle, because there is no air to blend with the effused blood. If there be copious effusion, the air is driven out, and then you cannot have the crepitous rattle, although the hemorrhage be confined to the air-cells. And when the effused blood is solidified, the absence of air and the compactness of texture would prevent the crepitous or crepitating sound; nor is there any respiratory murmur, for respiration in that part is out of the question. A stroke with the hand gives about the same kind of sound as when we strike over the region of the liver.

Hæmoptysis, in one or other of the forms mentioned, is well known to be more frequent than any other kind of hemorrhage. This may be accounted for by the very extensive bronchial and vesicular surfaces throughout which the blood is distributed, for the purpose of those healthful changes which are effected by the process of respiration; also by the very delicate conformation of the capillaries and mucous membrane of this part, the great liability of the lungs to congestions from defective nervous energy, from obstructions of the pulmonary veins and of the circulation through the left side of the heart, and from tubercular or other formations in the lungs that go to affect their natural structure. It is said by some that of all the indirect causes of hemorrhage from the lungs, none operate more prejudicially than tubercular formation. This unnatural deposit is liable to softening, by which it seriously affects the texture of contiguous blood-vessels, and finally causes their rupture.

All serious hemorrhages from the lungs are commonly attended with various *premonitory signs.* These are chilly sensations, redness and heat of the whole face, flushing of the cheeks, only; headache, coldness of the feet, an empty, shrunken, or collapsed condition of the cutaneous veins; uneasiness, and a sense of weight in the limbs; a spirit of inaction, sometimes cramps or spasms of the lower extremities; a feeling of unusual internal warmth, especially in the chest; pain or fullness at the epigastrium, or in the hypochondria; a burning sensation under the sternum, with anxiety or oppression, or actual dyspnœa; short, dry cough, with some tickling in the throat; shortness of breath on slight exertion; a dull pain or soreness under the sternum, between the shoulders, or beneath the clavicles; palpitations; quick, hurried pulse, sometimes hard, full, and even bounding, sometimes oppressed, and becoming full on the loss of blood from the arm; flatulence, costiveness, pale urine, &c. It is not to be expected that all these premonitory signs will be found in every case; and they may, also, be a good deal modified in individual cases. In some instances, neither cough nor difficulty of breathing, nor any symptom referable to the chest, has been complained of; or, if present, has been so light as to escape the notice of the patient's friends.

Before we proceed to consider the treatment of this kind of hemorrhage, it will be proper to notice some of the predisposing and exciting *causes.* These should have been named at an earlier period. The predisposition to hemorrhage from the respiratory organs is greatest between the ages of twelve and thirty-five, though found also at a much earlier period. It is sometimes an hereditary affection, and in these cases often lays the foundation of phthisis. A plethoric habit of body predisposes to hemorrhage, and then occasional venesection is a preventive. Tallness of stature, narrowness or deformity of chest, curvature of the spine, rickets, severe hooping-cough in very early infancy, sedentary habits, a bent posture, as at a writing-desk, change in the mode of life from active to inactive employment, certain trades, as shoemaking and weaving, the spring and summer season, suppression of accustomed discharges, congestions or enlargements of the liver or spleen, may operate as predisposing causes. There has been a diversity of opinion touching the relative prevalence of this kind of hemorrhage in the sexes, but I suppose that it is nearly equal. We may add to the predisposing causes named, excessive venereal indulgence, masturbation, and a scrofulous habit.

The exciting causes are, all kinds of violence inflicted on the chest, by falls, blows, lifting great weights, and attempts to lift suddenly; compressing the thorax by tight lacing, running, and other violent exercise, loud and long speaking, playing on wind instruments, acrid inhalations, anger, and the more violent emotions, frightful dreams, sudden amazement, severe fits of coughing, laughing or sneezing, straining at stool. We have previously noticed the changes in tubercles as tending to produce hemorrhage.

The Treatment.—In the treatment of what has been called *active* hemorrhage, that is, where the pulse is excited and there are marks of vascular fullness, we must proceed very much as in a case of active inflammation. The patient's head and chest must be elevated, and a vein opened with a large orifice. It is best to bleed the patient while sitting or standing, as this often puts a stop to the hemorrhage very promptly. If practicable, keep him in the sitting posture, and apply ice to the front of the chest, and until it can be applied, use cloths soaked in cold water. The ice or cold in any form acts by effecting contraction of the bleeding vessels, just as it does in arresting uterine hemorrhage. It is proper, also, to have all the patient's clothing loosened, the windows and the doors thrown open. Do not allow the patient to move, nor to speak. Exercise of any kind may be fatal. There should be some one to watch the case carefully, lest the bleeding should recur when least expected. If the patient have messages to send, let everything be ordered in writing, and the less of that the better. Until out of danger, let the food be only milk and water, lemonade, and the like, all quite cold. We often wonder how well such patients bear cold internally and externally applied, for whole hours; but we observe the same in the case of uterine hemorrhage. I never knew an individual to suffer from cold applied in any of these cases.

This treatment is generally sufficient. If some return of hemorrhage be visible, after copious depletion, then it will be proper to resort to the acetate of lead, which is also proper in what is called *passive* hemorrhage, when the pulse forbids the use of the lancet. From one to six grains may be given to a patient from six to thirty years old, every hour, until the discharge is arrested. In cases not so severe, a grain or two every four or six hours may suffice. Some practitioners always add opium to the sugar of lead, a fourth of a grain to two grains of the lead. But I have often given the lead alone, and never saw colic as the result, because I have taken care to guard against constipation by the occasional use of castor oil or frequent injections, and the use of sweet oil. The salts that contain sulphuric acid, as Glauber's and Epsom salts, are improper, because their acid forms an insoluble salt with the lead. Sometimes much larger portions of the acetate of lead than I have named may be needful, and they may be given with entire safety. If the patient labor under pains in the bowels, it will be well to add a small portion of opium or acetate of morphia; but we must not forget to correct the costive state of the bowels thereby induced. Some add the acetate to a little extract of hyoscyamus, with which it is easily incorporated, and made into pills. The pill form is always the best for the salt of lead; and while the hyoscyamus prevents or allays spasm, it fails to constipate.

During the entire treatment of such cases, we must watch the pulse and keep it down. If the patient be harassed for a considerable time with occasional discharges of blood, in place of the salt of lead, he may use the mineral acids, as the elixir of vitrol or nitric acid, keeping up a discharge from the chest by means of a blister or issue, and avoiding all exciting causes. He should be especially careful to guard against sudden changes of weather.

An entire change in the mode of life sometimes operates very beneficially in persons subject to attacks of bleeding from the lungs. Some twenty years ago, I had a female patient who was reduced very low by repeated hemorrhages from the lungs. She was quite delicate, and seemed to be predisposed to pulmonary consumption. She had several children around her, and lived at ease in a pleasant village near Philadelphia, in which city her husband was engaged in mercantile business. Adverse circumstances led him to agricultural pursuits in a fine healthful neighborhood, about eight miles from the village in which the lady had been my patient. There the cares incident to a large farm called for her constant supervision. She entered upon a new round of duties, and was so much occupied that her friends feared she would sink under the burden. But they were happily disappointed. Her health became vigorous, her strength increased, and she ceased to be a subject of bleeding from the lungs altogether. I never witnessed a more complete restoration. A similar change in all the habits of life would not only operate on children most favorably in respect of attacks of hemorrhage, but it would be likely to check an already began tubercular deposit in the lungs; or, by curing the hemorrhagic tendency, remove a very frequent cause of tuberculation. For it must not be disguised that reiterated hemorrhages from the lungs do frequently lay a foundation for fatal pulmonary disease; and this is occasionally an hereditary misfortune.

Hemorrhages from the Stomach.—The term *hæmatemesis*, which denotes a vomiting of blood, is also employed in place of the phrase *hemorrhage from the stomach.* The latter may take place, and actually does in small quantity, without vomiting. The blood passes from the stomach into the bowels, and escapes per anum.

We find this kind of hemorrhage more frequently in females than in males. Women who are single, of a plethoric habit, laboring under some obstruction or other irregularity in the catamenia, with torpid and long constipated bowels, are often its subjects. The discharge is almost always preceded by marks of a deranged balance in the circulation. A chilly sensation pervades the back, and even amounts to an actual chill, just before the hemorrhage takes place. The stomach is often sufficiently irritable to have that condition much increased by the gradual or sudden accumulation of blood in it, which is of course a foreign body, and therefore offensive. Hence the effort to get rid of the collection by an act of vomiting. We seldom find pure blood thrown up in these cases. The exceptions are in the case of rupture of gastric blood vessels from external violence, or from a morbid state otherwise induced. It is a feature in the discharge that it seldom coagulates. It would seem to be the result of a purely passive hemorrhage, or an exudation from the most minute vessels of the mucous membrane.

Although we do not often meet with hæmatemesis in very young children, there is no good reason to be assigned why it may not occur at any age. West, in his *Lectures on the Diseases of Children*, refers to the infrequency of the disease in infancy, and other authors have made the same allusion. A case is reported in the *London Lancet* for July, 1850, of vomiting of blood by an infant only thirteen months old with fatal issue. We presume that the same causes which set up hemorrhages elsewhere may involve the stomach also and at any age.

Diagnosis.—How shall we distinguish this discharge from hemorrhage from the lungs? Can we certainly do it? It is affirmed, and with truth, that the bleeding from the stomach is preceded by a sense of weight and pain in the gastric region, with a total absence of cough. But mistakes have been perpetrated, as the records show, by inferring from actual cough, which may be present, that the blood came from the lungs and not from the stomach. In one of these cases the cough was considerable; there was gastric uneasiness, and blood was vomited freely. It was said to be hæmoptysis; but dissection revealed scirrhus of the stomach, with an ulcer, from the centre of which the blood poured out from a ruptured artery.

It has also been supposed that the lighter color of the blood when discharged from the lungs would suffice for deciding the case; but this sign fails, since the blood is not always very different from that ejected from the stomach.

If there be no cough at all, and only great gastric uneasiness, these will be our best guides in most cases. And yet all indications may deceive, so that medical men should be cautious in hastily pronouncing an opinion.

The Treatment.—Bleeding will always be proper and necessary in persons who are decidedly plethoric with no marks of debility. A free bleeding will often at once check the discharge. The patient must be kept perfectly still, free from motion as possible. Cold acid drinks should be given, as elixir of vitriol and water, water of cremor tartar, lemonade, vinegar and water. The bowels should be emptied by an injection, if constipated, and gentle laxatives exhibited. Acidulated solutions of Epsom salts will be very proper. Sometimes, after a free bleeding from the arm, the hemorrhage from some unknown cause may return; or we may be called to treat a patient who will not bear bleeding at all, owing to great debility; and in all such cases we must rely on local depletion by leeches or cupping, followed by blisters to the epigastrium; or we may administer the acetate of lead in doses of from two to five grains in pill, every two or three hours, according to the urgency of the case. The patient should all the while use cool acid drinks, and be kept cool.

In some cases, however, where we find the patient greatly debilitated, we may at once check the discharge by giving from half a drop to a drop and a half of creosote in water. Sometimes from ten to fifteen drops of muriated tincture of iron every two hours will succeed, by its astringent and tonic power; and sometimes a full dose of opium with sugar of lead will arrest the discharge completely—two or three grains of opium and as much sugar of lead repeated in an hour, if necessary.

Hemorrhage from the bowels may follow rupture of the blood-vessels in the stomach or bowels. If from the former and not vomited, the blood may pass down and constitute a real bloody discharge per anum.

A notion was long ago held that every moderate evacuation of blood by the bowels was salutary, and therefore never to be meddled with. But this is an error. If the discharge be small in quantity and soon over, even though it may be repeated, it may not prove a serious affair. But if much more considerable in quantity, and quite frequent in recurrence, the effects must be at length more or less disastrous. The constitution will not always endure such a drain, and the bad effects will be apt to show themselves pretty plainly in some kind of constitutional disturbance or other, and the brain will be very apt to feel the shock.

The *pathology* of this discharge is not very clear. The examination of patients who died by reason of the hemorrhage has not furnished satisfactory evidence. Often it has occurred that blood has been discharged in the act of having a stool, by violence offered to a tender vessel at the verge of the anus by very hard and perfectly solid excrement. In these cases, there may be only enough blood to show itself as such; in others there may be quite a large collection. It has also happened in the act of straining that a vessel somewhere in the canal has been ruptured, and hence the hemorrhage. In some cases, the patient has had hemorrhoidal tumors or piles, from which blood has been forced. Many persons have this disease to such an extent that they pass blood whenever they go to stool. Sometimes hemorrhage has taken place to a great extent several days before death occurred, as in fevers, and then we have no satisfactory information from the post-mortem research.

In all cases, however, whether high up in the small bowels or whether in the large intestines, or at or near to the verge of the anus, the hemorrhage necessarily involves the idea of ruptured vessels; and this is about all we know of the pathology.

The *symptoms* of this kind of hemorrhage may be inferred, in part, from what has been said. The patient, just before the attack comes on, may be seized with unusual fullness of the rectum, and of parts higher up; this may be accompanied by more or less of a smarting kind of pain, which in some cases is quite severe, especially just at the moment of passing the fæces, when, for the first time, it may be, blood will be found to have escaped in considerable quantity. In other cases, the patient may feel disposed to sit a long while, and to strain a good deal; he feels much irritability near the verge of the anus, and something, he knows not what, impels to efforts to get relief by evacuation. Every such effort increases his uneasiness; he has true tenesmus, discharging not fæces, nor as yet blood, but only a thin mucus. This state of things is often induced by internal piles, which will explain the fact, of greater irritation at one time than at another. Besides the internal piles, there may also be some external tumors partially ulcerated, and ready to bleed at any moment, when sufficiently irritated. And often while the patient is making efforts at stool, one or more vessels will be ruptured, and blood poured forth, in small or large quantity. After such evacuations, there is usually, for a season, considerable relief from pain. But should inflammatory action supervene, as is sometimes the case, we shall have induration, consequent on effusion of lymph into the cellular membrane, thus laying the foundation of permanent disease of the rectum, by stricture, or by tubercular formations, extending even to the verge of the anus.

The Causes.—The causes of hemorrhage from the bowels and of hemorrhoidal tumors are quite numerous. In addition to the bad effects of long-retained and hardened fæces, which must in many cases do great mischief, many persons seem to think that the habitual use of aloes is a fruitful cause. I have no doubt that where a predisposition to these affections exists and is obvious, aloetic medicines, by reason of their special action on the rectum, may be and are very injurious. Yet I feel assured that these maladies have often supervened in subjects who had never taken aloes in any shape. It is affirmed that long-continued exercise in the standing posture, or long sitting on a cold or very damp seat, may bring on an attack. Indeed, we may say, in general, that all the impediments to the flow of blood through the veins of the abdomen may suffice to set up these affections. It is for this reason that pregnant females far advanced are painfully troubled with hemorrhoidal tumors, and sometimes with hemorrhage from the bowels from this cause. Tumors of the uterine system, enlarged ovaries, diseases of the liver, may act as a cause. And further, it cannot be doubted that both piles and bowel hemorrhage are sometimes dependent on gastro-intestinal irritation. Owing to acquired debility of the bowels, and a hemorrhagic diathesis, some quite young persons of both sexes are met with laboring under occasional attacks of intestinal hemorrhage. We are not aware of any facts going to show that age has any special relation to this form of disease.

The *treatment* has special reference to the regular condition of the bowels. Where there is only a slight formation of piles, we may prevent the growth and so avoid hemorrhages by frequent injections of cold water, or of warm water, as may be most agreeable. If there be more irritation within the gut, it will be very useful to take a pretty large injection of slippery elm infusion, thin starch or thin gruel, just before attempting to have a stool. Some prefer for this end a decoction of flaxseed, commonly called flaxseed tea. Besides these, it is necessary, indeed absolutely essential, to give gentle laxatives sufficiently often to keep the bowels regularly open daily. A positive looseness is not desirable, and may do harm by its irritation. The late Dr. Physick preferred flowers of sulphur in such cases to all other laxatives, taken with molasses. And at the same time, he required his patients to live chiefly on mush made of corn meal, with molasses or sugar added to it. He also advised to have the stools, if practicable, in a posture as nearly erect as possible. This treatment refers to the disease known as piles; and as we have seen that these are a frequent cause of hemorrhage from the bowels, it is vastly important to direct our treatment to them.

If a good deal of blood be lost, and apprehension exists that another flow will soon come on, it will be necessary to give it particular attention. It may be needful to exhibit the creosote as before named. This is exceedingly prompt, by its high styptic power, in the arrest of hemorrhage. Or we may give opium and acetate of lead liberally, at the same time using cool acid drinks. In cases of copious hemorrhage in low fever, I have succeeded in preventing a further flow by throwing into the rectum an injection consisting of thirty grains of sulph. quinine, two ounces of vinegar, and as much water, and repeating once in two hours or oftener, if necessary. This kind of prescription is perfectly safe for the youngest subject, being reduced, of course, to suit the age.

Hæmaturia has been well defined "discharge of blood from the urinary passages." If blood is found to escape by the urethra, we infer that it has proceeded from the kidneys, bladder, or urethra. And as these several sources give rise to symptoms somewhat different, it is well to bear them in mind. When the blood flows from the kidneys, fullness, weight, and dull pain in the loins are complained of, and these are accompanied by more or less faintness and nausea. If the discharge of blood is from the bladder, and has nothing to do with the kidneys, the patient complains of heat and fullness above the pubes, with involuntary efforts to bear down, and urgent efforts to urinate. Bloody discharges from either the bladder or kidneys very generally depend on some kind of external injury. We have active hemorrhage more frequently from the urethra only, and it is almost always induced by the use of bougies, introduced for the relief of stricture.

In patients with purpura hemorrhagica, we sometimes notice discharges of blood per urethram. The irritation of calculus in the bladder has had the same effect. And although this kind of hemorrhage is not so frequent in children as in adults, yet we do occasionally meet with it in quite young subjects.

The Treatment.—We suppose it to be decided where the seat and source of the blood is before remedies are applied, for this is always desirable.

If the hemorrhage be of the active kind, and in a plethoric subject, and the pulse full, it will be safe to open a vein and draw blood pretty freely. The remedy is the more called for, if local pain exist, and that may be relieved by cups or leeches to the pubes or loins. If these do not check the discharge, acetate of lead will hardly fail to do it. To patients between six and thirty years old, we may give from one to five grains, with a half grain of opium, or one-eighth of a grain of acetate of morphia, three times a-day, in pill form; and, if need be, we may double the quantity of sugar of lead, and repeat it frequently.

In all cases of internal hemorrhage requiring astringents, it is affirmed by a recent writer that the gallic acid is decidedly the best, far superior even to tannin. The dose may vary from five to ten grains every two or three hours, given in mucilage or pill. (See *Braithwaite's Retrospect*, part 19.) The late John Hunter was very partial to the spirits of turpentine, in doses varying from five to fifteen drops four or five times a-day.

If we are satisfied that the bladder is distended by the bloody fluid, the sooner it is drawn away by means of a catheter the better. If the discharge of blood come solely from the urethra, we can command it by pressure with the thumb and finger, and the application of a suitable compress and bandage. Gentle laxatives and injections of cold water may be safely and usefully employed in all cases of hæmaturia. If the discharge occur in hot weather, it can be checked by applying bladders of ice to the pubes or loins, or even to the urethra. In cases attended with much constitutional irritation, opiates will prove very serviceable. In all cases where much blood has been lost by the discharge, we must exhibit opiates. They calm the nervous system, and give time for recuperation, by the repose they secure.

INFLAMMATION OF THE PHARYNX, ŒSOPHAGUS, AND STOMACH.

Bretonneau designated by the very objectionable term *diphtherite*, a peculiar inflammation of the pharynx, which kills by extending to the larynx and trachea, inducing suffocation. It has also been called *membranaceous sore throat*. The word diphtherite is derived from the Greek, and originally means a *membrane*, so that it would equally apply to croup; and some writers have accordingly made it synonymous with this disease. Aretæus is supposed to be the earliest author who has described this affection of the pharynx, under the titles of the Egyptian and Syriac ulcer. We quote, as follows, from Coley, on the diseases of infants, touching this malady:—

"About the year 1337, the latter disease appeared as an epidemic in Holland, and in other parts of Europe, and re-appeared in Spain at the commencement of the seventeenth century, and was described by Mercatus, Villareal, Nunnez, and other Spanish writers, as affecting the tonsils, extending into the air-passages, and producing death by suffocation, whence it received the name of *garotillo*. In 1618, the epidemic showed itself at Naples, where it became as fatal as in Spain, commencing its attack in the pharynx, producing dysphagia, and terminating its career by spreading to the larynx, and exciting suffocation, as if the patient had been strangled. Seventeen years after this period, the disease reached Kingston, in North America, where it was more particularly confined to infants. From 1743 to 1748, this epidemic raged in Paris, according to the reports of it left us by Malonin and Chomel; and, a short time afterwards, Fothergill and Stow published accounts of an epidemic malignant sore throat, which prevailed in England, which was sometimes secondary, and in connection with scarlatina, and at others primitive, and resembling, from the description of Stow, the disease under consideration. In 1771, Bard, of New York, published his sentiments on this subject, which partly corresponded with those of Bretonneau, who considered the disease to be analogous in its nature with that of croup, and the false membrane to be the product of a concretion. In proportion as the real nature of this disease has been unfolded by modern researches, it has been disarmed of much of its supposed malignity, and brought more under the control of art. It begins with inflammation of the mucous membrane of the soft palate, tonsils, and pharynx, terminating in the secretion of a false membrane, *without any ulceration or destruction of the true skin.* As the inflammation advances, it is apt to extend to the larynx, and to produce the symptoms and fatal results of croup. In one form of the disease, gangrene or sloughing of the inflamed parts takes place, particularly in children of feeble constitution. The attack begins with a little fever, attended with a slight difficulty in swallowing. On inspecting the throat, the tonsils are perceived to be swollen, and small portions of white or yellowish lymph may be seen, resembling muguet, on different parts of the soft palate and pharynx. After a short time, these deposits of lymph assume a gray color, and acquire an offensive odor; and a copious discharge of saliva flows from the corners of the mouth. At this period, the cervical glands become inflamed and swollen. At length, the gray lymph constituting the false membrane either falls off in a mass, and is ejected through the mouth, or it is separated in fragments and discharged by degrees, and is often reproduced. The appetite is little affected, and neither vomiting nor diarrhœa is present, unless the mucous coats of the stomach and bowels are the seats of the diphtheritic production. When recovery commences, the false membranes cease to be reproduced, and the surface of the mucous membrane, by which they had been secreted, presents a red excoriated aspect, without any degree of actual ulceration; the swelling in the cervical glands subsides; and at the end of eight or ten days recovery follows. In the more malignant cases, the disease extends into the air passages, producing symptoms of laryngeal and tracheal inflammation. First hoarseness is observed; then a harsh, suffocating cough, accompanied with a croupy sound and an anxious expression, followed by a pale cadaverous countenance, with the eyes sunk in their sockets; hurried and feeble pulse, cold skin; and terminating, when unrelieved, in irresistible stupor, a purple color of the lips, face, and extremities, and speedy death. When the bronchial tubes are visited by this disease, the cough becomes more frequent, the breathing more rapid, and accompanied with a mucous or rattling sound, and the patient sometimes expectorates shreds or tubular portions of lymph presenting a membranous appearance. This is frequently the sequel of laryngeal inflammation, and after the latter has been relieved, disappoints our hopes by a rapidly fatal termination. Sometimes, also, the Schneiderian membrane becomes the seat of the membraniform secretion, when a most fetid discharge takes place through the nostrils; and in this variety of the disease, symptoms of typhus present themselves. The morbid appearances observed after death are not confined to the pharynx, larynx, or trachea; but false membranes are often discovered in the œsophagus, stomach, and intestines.

"This disease is sometimes a symptom of malignant scarlet fever.

"*Treatment.*—As the danger of this disease is in proportion to the nature and extent of the false membrane, our principal reliance must be placed on local remedies. Of these the most effectual are hydrochloric and nitric acids, either of which may be conveyed to the diseased parts by means of sponge or linen rag fastened to a piece of cane or whalebone. The acid should be rubbed or pressed firmly on the surface of the parts affected, so as to insure its contact with the inflamed membrane and the detachment of the lymph. In very slight cases, resembling muguet, a lotion composed of two grains of bichloride of mercury, or ten to twenty of nitrate of silver, to an ounce of distilled water, will be found sufficient to separate the excretion and remove the subjacent inflammation, the progress of which must be carefully watched and promptly arrested. The operation of these powerful stimuli on the congested and inflamed surface is that of producing contraction, and restoring the natural action of the minute vessels. The physician, therefore, must not suppose that the object for applying hydrochloric acid is merely to destroy the texture and to disinfect the false membrane, but to excite activity in the torpid vessels, on the same principle that nitrate of silver and other stimulants remove chronic inflammation and ulceration in the cornea when its vitality has been diminished. When the larynx becomes the seat of diphtherite, it must be treated in the same active manner as primary croup, by leeches, and chloride of mercury given in frequently repeated doses till the gums become affected, or the laryngeal inflammation has subsided. The chloride may be given for this purpose in doses of two grains once in two hours; and the same practice should be adopted in the treatment of severe cases, when the tonsils and pharynx only are affected: experience having proved its utility in arresting the progress of the inflammation and preventing its extension to the respiratory organs, which it is of the utmost importance to protect from its destructive invasion. The peculiar and curative action of mercury on the capillary circulation will be found to cooperate with the external stimuli, and I believe it acts on the same principle, namely, that of exciting an artificial activity in the general circulation, by means of which the small arteries are enabled to propel their lingering contents through the inflamed and congested membrane. During the whole illness, the apartment should be carefully ventilated to dilute the putrid effluvia. When gangrene occurs, the hydrochloric or nitric acid will be found the best application. It may be used daily, and in the intermediate time a gargle composed of two drachms of the acid to half a pint of water may be applied by the patient, or carefully injected with a syringe. In this condition of the patient, sesquicarbonate of ammonia may be exhibited frequently with advantage in a dose of three or four grains. After the inflammatory stage of the disease has terminated, the strength of the patient may be supported by broth and other nutritious aliment, and by disulphate of quinia, as soon as the vessels of the skin become relaxed. During the earlier periods of the malady, milk will be found the most appropriate and grateful food for the patient.

"When all hope of recovery from other means is at an end, the operation of laryngotomy has been proposed and performed in one instance by Bretonneau with success. The propriety of recommending this operation will depend on the absence of bronchial inflammation. Should this be present, there will be no advantage from any operation; on the contrary, the cough and difficulty in expectorating the mucus and threads of lymph would be partly increased. When, however, the bronchial passages are free from disease, and death appears to be inevitable, the operation of opening the larynx or trachea may be adopted, and ought to be recommended."

Dr. Wadsworth, a graduate of the Philadelphia College of Medicine, informed me that this disease prevailed as an epidemic in western Pennsylvania, not long since, with marked fatality. The first patient he saw died in about three days after appearing to recover, nearly at the end of the first twenty-four hours. There were no true signs of croup until a few hours before death. He treated this patient with lunar caustic, chiefly; but in subsequent cases, tried the muriatic acid, as advised above, and with decided success. The disease was confined to the village population, with a single exception, and occurred in midsummer.

When the disease proves fatal, it is owing to the larynx and trachea being involved, and suffocation ensuing, or to the operation of a typhoid element, such as gives fatality to scarlatina and puerperal fever, when they appear as epidemics. In some of the cases referred to by Dr. Wadsworth, the disease continued fourteen days.

I have known inflammation of the pharynx to assume a very chronic form, causing distressing irritation, a sense of choking, and provoking efforts to cough and scrape, as though some foreign body obstructed the passage. In all such cases, the mucus follicles are enlarged and perhaps ulcerated, the secretion being depraved and very viscid. In these protracted cases, there is a good deal of nervous irritation, especially in females about the time of puberty, and this associated with manifest debility. In such cases, the local application of nitrate of silver, either by the stick or strong solution (a drachm to an ounce of water), with the internal use of the sulphate of quinine, or Huxham's tincture of bark and tincture of valerian, will be among the most efficient means we can employ. If there be a scrofulous diathesis, cod-liver oil, or the hydriodate of potash should be administered.

℞.—Tinct. cinchon. Hux. ℥iv;
Tinct. valerian, ℥i.
Mix. Dose from one to three teaspoonfuls, six times a-day.

The *œsophagus* is also subject to inflammation and its consequences. Yet it is generally believed that no portion of the human system is so little liable to disease as this. Perhaps this may be owing to its peculiar structure; and probably for the same reason we rarely ascertain that disease is there until ulceration or stricture are found to exist.

Poisons may set up inflammation in every part of the œsophagus; but apart from this agency it is rare to meet with general œsophagal inflammation. It is affirmed that ulcerations and sloughing have been found in the œsophagus of patients who died of phthisis. In those cases, it is probable the cause was tuberculous.

There may, however, be partial inflammation and of course partial ulceration of the œsophagus. It may suffer in spots, as other parts suffer, and we can assign no reason for the facts. The patient will experience some pain in the part, and a momentary arrest of the food in its passage to the stomach. If the whole calibre suffer by inflammation, then the pain will be more extensive, and the constant irritation set up by agents of any kind will excite frequent efforts to vomit. If the inflammation pass into ulceration, involving the whole tube, as the ulcers heal, there will be more or less contraction and consequent constriction; the calibre will be lessened, sometimes to such an extent as to impede very much the act of deglutition. In some cases, this state of things is so serious that the patient is unable to swallow a particle of solid food, and is forced to receive nourishment by injections alone.

In the *London Lancet* for July, 1850, may be seen an interesting discussion, elicited by a case of contraction of the œsophagus, induced by swallowing soap-lees, with fatal issue at the end of two years and three months. One of the debatants named the case of a small child, affected in the same way, and from a like cause, with recovery in ten months, chiefly by the use of bougies.

The Treatment.—It is obvious that from the location of the disease, we cannot inspect it, and therefore must be ignorant of its true extent, as well as of its actual character. Hence, in resorting to local bleeding or counter-irritants, we are compelled to be guided by the feelings of the patient. Leeches, cups, blisters, tartar emetic ointment, or the pustulating liniment of croton oil may be necessary, and all may be required in succession. In addition to these, if there be febrile irritation, we may bleed from the arm, moderately, and should keep the bowels open by injections, and occasionally by the use of gentle cathartics, such as castor oil. It has been proposed to try the alterative action of mercurial medicines; and I suppose, if nothing be present to forbid, the remedy may be useful. In all scrofulous habits, the use of iodide of mercury might be advantageous; and some form of iodine will be indispensable.

Instruments of various kinds, chiefly in the nature of bougies, have been introduced in order to effect dilatation; but these can never be proper until all evidence of inflammatory action has passed away.

While the patient can take nourishment by the mouth, the softest and mildest food should be employed. Fluid diet is most easily taken. If the constriction be so great that food cannot be swallowed, the strength must be supported by nutritive injections. I knew a case in Philadelphia, in 1810, under care of the late Professor Wistar, in which it was impossible for food to be taken in any other way, for months, than by injection. Soups, arrowroot, gruel, sago, each and all can be freely administered in this way, and the strength will be duly maintained.

The contraction of the œsophagus when less grave may continue for years. It may be owing to excrescences of a fleshy, or cartilaginous, or even bony nature. This kind of contraction may be gradually induced by inveterate addictiveness to the smoking of tobacco, the swallowing of fluids too hot, the use of very stimulating drinks, the abuse of mercury, &c. &c. The disease is perhaps never cured under these circumstances. Relief may be afforded by the occasional introduction of a bougie, but medicine seems to exert but little power on it. Perhaps the long-continued use of hydriodate of potash might be serviceable, in virtue of its universal alterative agency and its power to awaken energy in the absorbent system.

The chief obstacle to the success of bougies lies in the difficulty of keeping them *in situ* long enough to act efficiently on the strictured spot. Yet, it is well to try their daily introduction for a long time, gradually augmenting their size, so as thus to overcome the constriction by the force of habit.

Acute inflammation of the stomach is not so often seen in very young children as in adults. It is always marked with great tenderness of the epigastrium, and high irritability, febrile heat, &c. We must treat it by local and general bleeding, if the system will bear the latter, by iced-water, and all suitable antiphlogistics, taking care to keep the bowels free by injections. This state of the stomach is sometimes overlooked and neglected, and passes into a subacute grade of inflammation, setting up either cholera infantum or troublesome indigestion.

The softening of the stomach and œsophagus, so often adverted to by writers, as following inflammation, will be found, I think, most frequently in those children whose systems are more or less tainted with scrofula. In all such patients, the active depletory and mercurial treatment does harm; and we shall oftener succeed with iodine inunction to the abdomen, and small doses of the hydriodate of potash.

Indigestion, as above noticed, is manifestly a product of gastric inflammation, which is very uniformly of a mild form, and long continued. I cannot better state my own views in the further consideration of this result of gastric inflammation of childhood than by quoting from the work of Coley, as follows:—

"Most delicate infants, especially those who are not suckled, experience at a very early age great inconvenience, pain, and misery from the presence of undigested food in the stomach. The human stomach is composed of three coats; the outer, or peritoneal, common to all the abdominal viscera; the middle, or muscular; and the inner, or mucous or villous coat. We also find the stomach supplied with arteries, veins, absorbent vessels, and nerves. The peritoneal is a serous coat, from the free surface of which is secreted a fluid or halitus, intended to permit the different parts invested with that membrane to remain in contact with, or to move on each other without acquiring adhesions. The muscular coat consists of numerous white, fibrous bands, which, during the digestion of the food, acting in succession in a vermicular peristaltic manner, agitate the food, and expose every part of it to the action of a solvent. This solvent is the gastric juice, which is secreted by the villous or free surface of the mucous coat for the special purpose of dissolving the aliment, and reducing it to a pulp, which, from its resemblance to an expressed juice, is called chyme. As soon as this chyme is prepared, the lower orifice of the stomach, called the pylorus, or porter, or gatekeeper, instinctively opens itself, and permits the contents of the stomach to pass into the first intestine, called the duodenum. The gastric juice is an inodorous, transparent, slightly viscid liquid, imparting a saline taste when first secreted, and containing during digestion a small portion of muriatic acid. It is furnished by separate glands, varying in size from the ninety-second to the ninety-eighth of an inch, the largest being situated towards the fundus, and the smallest towards the pylorus. The secretion of the gastric juice and the whole process of digestion are performed independently of volition, under the influence of nerves proceeding from abdominal, ganglionic centres, designed to support and regulate the vital functions. The sensation of the stomach, the sense of hunger, pain, &c., proceeds from a cerebral nerve, the pneumogastric, which, from its origin in the brain, and its ultimate distribution in the stomach, maintains a remarkable sympathy between those two important organs. Hence we meet with vomiting in connection with some disease or sympathy of the brain and cerebral affections proceeding from gastric derangement. During the edental period of infancy, nature has provided in the secretion of the mother's milk a liquid food not requiring mastication, and containing all the elements of nutrition, albumen, oil, and sugar, ready prepared for reception into the infantile stomach. When this aliment is imbibed in excess, it is regurgitated by means of a retrograde action of the muscular coat of the stomach, and the effects of indigestion are obviated. When, however, this does not occur, the food, whether milk or farina, is imperfectly digested, and, running into a state of fermentation, the stomach becomes distended by the generation of carbonic acid gas, and the peristaltic motion necessary for bringing every portion of the food into contact with the gastric juice is suspended or impeded, and the progress of digestion rendered incomplete. The reduction of the food into chyme, which, when perfectly formed, is attended with an agreeable sensation, is thus productive of pain in the stomach, which is prolonged until that organ has relieved itself of its imperfectly concocted contents through the pylorus, which reluctantly admits the crude aliment into the duodenum, or principal elaboratory of the chyle, where the primary elements of the blood are separated from the excrementitious mass, and prepared for absorption and transmission into the circulation. This prolonged uneasiness being mistaken by officious nurses for hunger, food is crowded into the stomach as often as the infant cries, and thus the mischief is hourly increased. Meantime, emaciation proceeds, the cries of distress increase, and the countenance assumes a miserable aspect. A constant rejection of the food follows, and, in extreme cases, death may ensue from want of nutrition, a species of marasmus having been induced, and the absorbent vessels having removed every particle of fat, and the skin, universally contracted, adhering to the bones. The same alarming or fatal results have also occurred to infants who have been suckled with innutritious milk, or by a diseased nurse, in which cases a diarrhœa is apt to attend. After death, no traces of inflammation have been found in some instances, while patches have been detected in others; and there has also been observed a morbid softness, or what we may properly call decay, in the mucous coat of the intestines, arising, in my opinion, from their exhausted vitality, or imperfect supply of nervous energy in the abdominal ganglionic centres. The first distant affection observable is a slight convulsive motion of the muscles of the eyeballs; next, spasm of the muscles of the larynx, a kind of hysterical suffocation, excited by the inferior laryngeal branch of the pneumogastric nerve; and, lastly, in some cases, after the third or fourth month, a peculiar spasm of the glottis, called laryngismus stridulus, or cerebral croup, during which respiration is suspended, and the child becomes discolored in the face. These remote and severe effects of continued indigestion are not common, and are mostly connected with a consequent derangement in the upper portion of the alimentary canal below the stomach. The more frequent symptoms of indigestion are pain, eructation of flatus, a slight spasm in the muscles of the larynx, rolling of the eyes, and a temporary dark appearance of the lips, arising from an obstruction to the return of venous blood through the jugular veins from the head. The connection existing between the pneumogastric and phrenic nerves gives origin to a very common symptom when the stomach is distended, namely, hiccough, or a convulsive motion of the diaphragm. Rejection of the food as soon as it has been taken occurs at an advanced period of the disease, and arises from the morbid sensibility of the mucous coat of the stomach, the consequence of continued pain, and is a principal cause of the emaciation accompanying it. This intolerance of food not only interrupts the process of digestion, but also that of chylification, and all the tributary secretions into and along the alimentary tube. Hence the large intestines, from want of their natural distension, and the regular exercise of their muscular fibres become torpid, and constipation is the result. In most cases the slighter forms of indigestion and flatulence spontaneously subside as the child advances in age, generally about the fourth or fifth month; but those who have been afflicted during infancy seldom through after life possess strong digestive powers, and are frequently, when females, the subject of neuralgic and hysterical diseases.

" *Treatment.*—The objects to be attained in the treatment of this disease in its early and most simple form are to effect the absorption of the gas with which the stomach is distended, and to accelerate the action of the bowels. These purposes are speedily accomplished by the following mixture:—

℞.—Magnes. ust. ʒss;
Sacch. alb. ʒi;
Ol. carui gtt. i;
Spt. ammon. fœtid.,
Tinct. sennæ, āā ʒss;
Aq. calcis q. s. to make ℥iss.

From a half to a whole teaspoonful to be taken when the flatulence is troublesome.

"The instantaneous relief afforded by this composition is sometimes astonishing, which I attribute to the rapidity with which the lime and magnesia attract and absorb the free carbonic gas.

" When constant rejection of food and extreme emaciation occur, the best remedies are a fourth or half a grain of disulphate of quinine three times a-day, and every third morning a powder composed of half a grain of the chloride of mercury, with a grain and a half or two grains of jalap. The salt of quinine has the same beneficial effect in removing the morbid sensibility of the gastric nerves as it manifests in other neuralgic affections; and the purging powder, by removing morbid secretions and increasing the peristaltic action of the bowels, renders the alimentary mucous surface in a more favorable condition for completing the process of chylification. When diarrhœa occurs from unwholesome milk, another nurse should be provided; and should not this change have the effect of repressing the purging, a teaspoonful of a chalk mixture, containing half a minim of tincture of opium, may be given the infant twice a-day.

"*Muco-gastritis* is another form of gastric inflammation, involving, as the name imports, the mucous membrane of the stomach, and constituting a very troublesome disease; at least, such is the fact very frequently.

"The color of this membrane is light gray or gray pink, shaded by venous ramifications, varying in size and numbers. The submucous tissue, to which its adherent surface is connected, is rather thick, of a faded white color, and overrun with blood-vessels, which are larger and less numerous than those on the free surface of the membrane. The inner coat of the stomach varies in different parts; being thinner, paler, and more transparent at the upper or larger than the smaller or lower extremity of the organ. In consequence of its tenacity in the former situation, the vessels of the submucous tissue are perceptible through it; and the connection between this tissue and the mucous membrane found more loose than at the lower end of the stomach. Hence the boundary between the larger extremity and the rest of the organ is often plainly marked by a line, where the character of the mucous membrane suddenly changes; its density increasing and its color approaching that of a delicate pink, in proportion as it extends towards the pyloric orifice, and its adhesion to the subjacent tissue being in the same proportion progressively more firm. The free surface of the mucous membrane is covered all over with viscid mucus of variable density, sometimes transparent and sometimes opaque, the product of muciparous glands, which appear like flattened papillæ. This membrane will, in common with the other tunics, undergo great distension from food and flatulence, and from debilitating and relaxing diseases; and, on the other hand, it may experience remarkable contraction from the powerful action of the muscular coat, which may continue after death, produced by inflammation in the peritoneal covering. When the stomach is fully dilated, its inner surface presents a smooth, polished appearance, without any ridges; but during a state of contraction, it is thrown into numerous folds, which are longitudinal at the larger, and cross each other at the smaller curvature, so as to form large areolæ.

"The inflammatory diseases of the stomach have been separated of late into erythematous or muco-gastritis, muguet of the stomach, follicular inflammation with ulceration, gangrene, and sero-gastritis, or inflammation of the peritoneal coat of the stomach; and the division would seem to be a good one.

"Muco-gastritis commences with chilliness, pale countenance, headache, constant thirst, and vomiting, which continue from thirty-six to forty-eight hours, unless sooner relieved.* After the vomiting has subsided, and reaction in the vessels of the skin takes place, the temperature on the surface of the body is greatly augmented. The thirst is so irresistible, that the child is constantly asking for water, or some other liquid, which is rejected from the stomach as soon as it has been swallowed. At this time, the tongue is coated with a white, dense fur, and the thirst becomes more intense. About the fourth day, a profuse perspiration commences, and on the following day the patient becomes convalescent. In many cases when the disease is complicated with muco-enteritis, it terminates in remitttent fever, particularly when it is neglected or improperly treated at the commencement. Subacute inflammation of the recti-abdominis muscles often attends this disease, and may be discovered by tenderness, pain and fullness in the front of the abdomen, which is generally mistaken for gastric peritonitis; a very different disease, both with respect to its nature and treatment. The diagnosis is not difficult. When the inflammation is seated in the abdominal muscles, the feeling is partial, and extends no further than the pain and soreness, the seat of which is defined by an obvious thickening of the integuments occasioned by a temporary effusion of a lymphatic secretion. The pulse is never higher than from 102 to 112. Inflammation in the peritoneal coat of the stomach, on the contrary, is denoted by a more extreme tenderness on pressure, by the superincumbent integuments being uniformly unaltered in density, and by the pulse being never under 120 to 130, or 140, according to the age of the child, its rapidity being increased in proportion to the juvenility of the patient. There is another disease, to which muco-gastritis may be said to have some resemblance, and by which it is sometimes succeeded by sudden metastasis, namely, cerebral meningitis, or acute inflammation of the pia mater, one of the membranes of the brain. It may be distinguished from this disease by the absence of stupor, and the ghastly countenance and pale lips, which are its uniform, concomitant symptoms.

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* Barthez et Rilliet, tom. premp., p. 435.

"The morbid appearances met with after death from inflammation of the mucous membrane of the stomach, which is an exceedingly rare event, are a capillary injection, a red appearance observable in patches extended more or less, irregular streaks, which commonly follow the shape of the ridges of the stomach; and numerous red points, very nearly approaching each other. These are accompanied either with or without a swelling, and with a friable state of the mucous membrane, more or less distinct. Sometimes the mucous secretion is more thick, viscid, and abundant than in the natural state of the parts. The rest of the ramiform inflammatory redness is in the vessels of the stomach, that of the capilliform in their minute terminations, that of the red patches, striæ and red points in the mucous membrane, and especially, as has been remarked by Lernet, in the papillæ or villosities of that membrane. This erythematous inflammation will be more or less intense, in proportion as the internal membrane may be found more or less friable and tumid. The ramiform appearance denotes a slighter degree of inflammation, and the capillary points, the striæ, and red patches, one of a more severe character. These different degrees of the disease, from the most slight to the most serious inflammation and disorganization of the mucous membrane, are found sometimes in the same individual. In pursuing these necrotomical investigations, care must be taken to avoid confounding these marks of inflammation with a passive congestion of the stomach, which is always discoverable at the lowest part of that organ, as in other parts of the body, when it occurs after death. This passive discoloration is always accompanied with a general congestion in the vessels of the alimentary canal, in the great abdominal trunks, and in the right cavities of the heart.*

"*Treatment.*—As the vomiting is the most urgent symptom, when medical advice is required, a mustard poultice should be immediately applied during one hour to the epigastrium, or pit of the stomach. The mustard poultice is made by mixing a tablespoonful of flour of mustard and the same quantity of oatmeal with as much cold vinegar as will render the whole of the consistence of a common poultice. As soon as the poultice has been removed, from two to five grains of chloride of mercury must be given the child, mixed with a little sugar, and at the end of three or four hours a small dose of salts and senna should be administered, and repeated once in two hours till the bowels have been well relaxed. Should the first dose of this medicine be rejected, a few minims of tincture of gentian may be added. As soon as the bowels have been evacuated, the citrate of potash should be given the patient once in four hours. Cold water is generally preferred to any other beverage, and may be allowed with safety, until perspiration commences. After the appetite has returned, broth, arrow-jelly, rice-pudding, and other light food may be taken. When the disease has extended to the bowels, and remittent fever commences, a proper dose of chloride of mercury and jalap, in the proportion of one part of the former and three of the latter, should be given every second or third morning.

"The subacute rheumatic inflammation sometimes accompanying muco-gastritis must be treated by leeches; and when it continues after the gastric disease has subsided, the bowels must be freely acted upon by the exhibition of five grains of carbonate and half a drachm of sulphate of magnesia three times a-day, until the pain and soreness have ceased.

"*Muguet* is another product of gastric inflammation, and calls for a somewhat special notice.

"The inner membrane of the stomach, like that of the mouth, is subject to an acute inflammation, which terminates in the secretion of an opaque mucous deposit on its surface over the delicate epidermis. The symptoms are redness of the mucous membrane of the mouth, which is covered in patches with muguet; vomiting; constant pain or uneasiness; thirst; intense heat in the skin in some cases, and in others defect of animal heat; rapid emaciation, especially in the extremities and abdominal parietes, which latter are remarkably tense and tender upon pressure, and sometimes flattened. When the disease extends to the bowels, a purging is also present. The feet are generally cold, the pulse irregular, and the countenance expressive of pain and misery. At length a state of insensibility succeeds, interrupted by frequent uneasiness. After a period of suffering, extending to six, ten, or fifteen days, the child becomes exhausted and worn out with pain, loss of sleep, and innutrition. When the temperature of the skin is much exalted, the disease is less alarming than when it is diminished below the natural standard. In the most dangerous cases, the face assumes at an early period a death-like aspect, the lips being white, and the languid eyes sunk within their orbits; while the frigid and inanimate skin retreating with its bloodless capillaries, and the fluttering or imperceptible pulse, indicate to the experienced attendant the inevitable approach of death.

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* Billard, pp. 326, 327.

"As muguet will always be found more or less in the pharynx, or some part of the mouth, as symptomatic of this disease, its diagnosis will not be difficult. The mouth and throat, therefore, should always be examined in doubtful cases.

"The morbid phenomena observable after death are deposits of muguet on the tongue, pharynx, œsophagus, and stomach; the mucous membrane of which is intensely red, much thickened, and very friable. The epidermis covering the mucous membrane, which is invisible in a state of health, may be seen white, fissured, and formed into ridges more or less deep beneath the mucous secretion. The mucous membrane, when softening occurs, resembles jelly; and sometimes complete perforation of the stomach is discovered at the centre of the diseased part. The muciparous follicles and the villi are rendered distinct and prominent by the inflammation; and the mucous membrane, where it is not softened, is thick and easily lacerated.

"*Treatment.*—In slight attacks of the disease, where reaction, denoted by intense heat on the surface, takes place, leeches may be applied with advantage to the epigastric region; and in such cases, should the vomiting still continue, a mustard poultice may be afterwards laid upon the skin, as soon as the bleeding has subsided. Should the hemorrhage from the leech-bites prove troublesome, or produce collapse, which in this disease is much to be dreaded, the bleeding must be checked by collodion, pressure, or other convenient means. If the child is of sufficient age to take the citrate of potash in a state of effervescence, it should be tried. In this milder form of the disease, the infant may be suckled from time to time, with the view of supporting his strength by the possible absorption of some of the milk. When the food is constantly and completely rejected, barley water with gum Arabic should be administered in small quantities.

"The more dangerous variety of this malady, which is easily discovered by its deadly influence on the vitality of the affected organ, by the fluttering and frequently subsiding and recurrent pulse, cadaverous aspect of the countenance, and coldness of the skin, must be treated on the same principle as the severe form of cholera, namely, by the cautious exhibition of opium, with the view of relieving the agonizing pain, and supporting the vital powers. From two to ten drops of the tincture of opium, according to the age of the infant or child, should be given once in four or six hours; and in case the medicine is rejected, it should be administered with a small quantity of warm starch in the form of injection by the lower bowel. In the same manner, broth or milk must be injected once in two hours, together with a few drops of the medicine first mentioned. Leeches should on no account be resorted to in these cases, as the least degree of collapse from loss of blood may be fatal. After the pain and irritability of the stomach have been relieved, half a grain or a grain of chloride of mercury may be given once in four hours, in conjunction with the opium. This combination will accomplish all that can be effected to modify the inflammatory action, and to arrest the disorganization of an organ of vital importance to the animal economy. In the decline of the disease, when recovery is expected to take place, benefit may be conferred by the exhibition of the acidulated solution of sulphate of quinine, alternated with the muriated tincture of iron, with a moderate allowance of animal food, increased as the digestive powers will permit. The following is a good formula for the quinine solution:—

℞.—Quin. disulph. gr. xv;
Aquæ ℥i;
Elix. vitriol gtt. x.
Mix.

"Give from a half to a whole teaspoonful four or five times a-day, and three times a-day in the intervals, three drops of the muriated tincture of iron, in a little sweetened water.

"The stomach is also liable to what has been called FOLLICULAR INFLAMMATION, in which the follicles are found to be isolated and not grouped, as in the small bowels. Sometimes they are found to be quite elevated, and resemble small, round, white granulations, slightly projecting, and terminating in black points, which denote their excretory orifices. At other times they are inflamed, considerably swollen, ulcerated, and disorganized. In the former case, scarcely any symptoms are present. In the latter, very dangerous or fatal symptoms of gastric inflammation may attend. Infants are most liable to this disease, which is marked more by the debility accompanying it than by any peculiar symptoms, except the discharge from the stomach of a large quantity of bluish and bloody fluids.

" *Treatment.*—The same treatment should be adopted for this disease as for muguet of the stomach. The danger will be found in proportion to the severity of the attack and the youth of the patient.

"Inflammation of the stomach may terminate in GANGRENE, which, although rarely seen, has been detected. This disease appears in the form of eschars or sloughs of various extent in the stomach. It was first described by Denis. Billard has also published the following case of gangrene as the result of inflammation :—

" 'Alexandrine Liseman, three years old, entered the infirmary March 3d, and on opening her clothes, it was discovered that a good deal of black blood had escaped by the anus. It was also ascertained that the same kind of matter had been ejected from the stomach. This little girl had a good constitution previously, as her external conformation indicated. She is nearly motionless, her face pale, lips discolored, the integuments flabby, and great debility manifest. Sugared water was ordered, together with dry frictions. On the 4th, the stools were mingled with black blood, and the same matter freely vomited. Sugared wine and water was then ordered. Death occurred on the day following.'*

"On examining the dead body, the integuments were found discolored, and the mucous membrane of the stomach, not far from the cardia, was completely destroyed to a considerable extent, the centre of which was tinged with black blood, and the sides, irregularly fringed, were black, and appeared as if they were burnt. On the outside of this black patch the mucous membrane was thick, of a purple color, and easily reduced to a pulp. All the inner surface of the stomach was covered with a semi-liquid matter, of a brown color, mixed with bloody streaks, and the mucous membrane beneath this matter was thin and discolored, especially near the pylorus. The small intestines were tinged with yellow bile, and contained some clots of coagulated blood.

" We name VOMITING as closely related to the conditions of the stomach, of which we have been speaking.

"The frequent regurgitation of food from the stomach of an infant is a salutary provision of nature, intended to obviate indigestion and other consequences of repletion. Vomiting is also symptomatic of other diseases, as inflammation of the stomach or bowels, or of the brain. Great care should be taken to ascertain the cause from which this symptom arises; for when it proceeds from the brain, it would be empirical and useless to apply remedies proper only for disease in the stomach. When vomiting is occasioned by congestion or inflammation in the brain, the patient has a pallid appearance, the face is contracted, the skin is cold, the pulse feeble and frequent, and sleepiness resembling stupor is constantly present, except during the act of rejecting the contents of the stomach. The sickness may be found to be a symptom of strangulated intestine, and therefore in all severe or doubtful cases, the child should be carefully examined for this fact to be ascertained before the treatment is commenced. Some cases of marasmus are accompanied with vomiting.

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* Billard, Traité de Maladies des Enfans, p. 341.

" *Treatment.*—As the proper treatment of this symptom must depend upon its cause, the reader is referred to the several diseases just enumerated for more particular information."*

Some of the most indomitable cases of infantile vomiting ever met with are absolutely incurable, and yet we cannot know this to be the fact during life. In the *North American Medical and Surgical Journal* may be found a case of this kind, which I treated in the year 1826. The child had very much the appearance of cholera infantum. Everything was rejected very soon after being swallowed. On dissection, the duodenum was found reduced by a stricturing band, to the diameter of a common goose-quill, about two inches beyond the pylorus. There were very slight traces of inflammation in the vicinity, but the stricture was the fatal lesion.

Many of the cases of vomiting in children are almost equally obscure, and hence we must be governed in our treatment of each by its own peculiarities, under the indications already pointed out in this volume.

ENTERITIS.

This denotes inflammation of the mucous membrane of the bowels, and is divided into the *acute* and *chronic* forms. It is more variant probably in its external manifestations than inflammation of any other structure that invades the economy, while its attacks come on usually in a very insidious manner. It is a disease that sometimes assails the youthful subject with great violence. Some of the worst cases I have ever seen were in the persons of children.

We shall notice the acute variety first, which though less often met with than the chronic form, is much more severe. It is, moreover, in many cases, a very deceptive disease, and calls for close vigilance.

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* Coley on Diseases of Infants.

The Symptoms.—In simple acute enteritis, we have intense, deep-seated pain, not confined to a spot, but liable to attack any portion of the intestinal region. There is a constant pain, but not of uniform severity; it may be aggravated at intervals, and is evidently increased on pressure. It differs from what is called a fit of the gripes, which consists of pain and purging, and the patient has quite comfortable intervals, whereas in enteritis the pain is all the while felt. The same distinction obtains in regard to colic. It is very important to bear this in mind. It may save from serious mistake. The griping and the colic may be relieved by stimulants, but these will aggravate the enteritis decidedly.

Besides the symptoms named, we find the patient laboring under costiveness; it may be very obstinate costiveness. Presently the abdomen becomes quite tense, and, as the pain augments, the patient shows it by distressing anxiety of countenance. In some cases the tongue has been perfectly clean and natural, or foul without redness; when dissection presently revealed most extensive inflammation. Sometimes it is altogether red, looks raw and quite smooth, like varnished leather. The tongue is white and the respiration accelerated. Nausea and vomiting ensue, and when the obstruction in the canal is very great there may be fæcal vomiting. The patient lies on his back as in peritonitis, the body bent forward and the limbs drawn up. This is remarkably so when the pain is chiefly about the umbilicus. To save himself from fits of more severe pain, the patient lies still, so that, however much he may be inclined to be restless, you find him generally quiet. He may throw his arms about violently, but he keeps his body still, for he feels compelled to do so.

The pulse is generally quick, small, and hard; not perhaps so tense as it often is in peritonitis, but still it is hard. It has been called a *wiry* pulse, because small and hard, like a small wire. From white, the tongue changes to brown as the case grows worse; and you then find the pain to have abated, or perhaps it has ceased entirely. Now the patient will allow you to press his abdomen, which is much swollen. If you percuss it, there is a sound emitted as if from a drum. Presently you find the patient restless, tossing about, delirious, pulse quite irregular and very quick withal, the respiration a good deal accelerated, and death about to close the scene. The skin is hot and dry through the day and night; but towards morning a slight degree of moisture takes place, and then the patient enjoys a comfortable sleep.

When the upper portions of the canal are inflamed, there is more or less nausea and a tendency to vomit. When the lower portions are implicated, there is pain in the iliac regions, and in the course of the colon, with more or less diarrhœa and considerable discharges of flatus. If the colon is severely affected, there is that peculiar twisting pain of the bowels which is called *tormina*, coming on in paroxysms, and with intervals of perfect ease.

Anatomical Characters.—In many cases, indeed in most, we find no effusion of any kind. But there is always redness more or less marked. Sometimes we find an effusion of lymph on the mucous surface, and some serum.

The latter arises from the complication of inflammation of the peritoneal coat. When there is very great congestion, we find a part of the bowel almost black or very dark-colored, quite as much so as blood can be. Many a time, a superficial observer has called this *gangrene*, and has really thought it was. Yet if we press it with some force, it resists the fingers as a gangrened part would not. I do not say that gangrene may not take place, but it is a very rare occurrence. The gut is easily torn, and it smells badly. Sometimes pus has been found in the substance of the intestinal coats. The mucous membrane within and the serous membrane without are inflamed, but the chief seat of the inflammation is the cellular coat of the intestine. The muscular fibre may be hypertrophied, but is rarely inflamed. There can be no doubt, however, that the mucous membrane also is inflamed.

The Diagnosis.—We distinguish enteritis from peritonitis by the obstruction of the bowels and its consequences, nausea and vomiting, and by the fact that the pain is fixed at and about the umbilicus, where it is very generally seated, while in peritonitis the pain is diffused.

The Causes.—Any of the usual causes of inflammation may set up enteritis. Cold and wet applied externally, and cold internally, have induced it. Anything that will cause obstruction in the canal may set up the disease.

The Treatment.—In this disease, as in colic, we should early ascertain whether there be a hernia or not. The tumor may be so very small that a hasty inspection would pass it by. A small portion of bowel may slip down and even the patient not know it. If there be a hernia, it must be treated accordingly. But if there be none, the first thing we have to do with the patient is to bleed him. Bleed freely, boldly; and in order to make a decided impression on the system as speedily as possible, bleed in the upright posture, and from a large orifice. It is proper, of course, to have some respect to the patient's strength and habits; but still we must bleed freely, so as to make a decided impression on the pulse, and even to induce fainting. Sometimes the wiry, small pulse will become full and round, by the free detraction of blood, and this is favorable, as it shows the blood-vessels to be relieved from a state of oppression, induced by congestion and inflammation. This treatment refers, of course, to very grave cases. For the milder kind, leeches to the abdomen will often answer; from twelve to twenty leeches at once, and these followed forthwith by the warm bath and hot fomentations, or a hot mush poultice to the whole abdomen. In some cases, a mustard plaster will do good service, but should not be kept on longer than half an hour.

After free bleeding in the gravest cases, it is proper to give a scruple of calomel, and at the same time an injection of infusion of senna and Epsom salts. The calomel may be repeated in ten-grain doses, every four or five hours, until free evacuations are procured. If slight ptyalism follow, the cure will be more likely to be permanent.

In the milder cases, where we substitute leeches for general bleeding, laxative medicines by the mouth, and active purgative injections, will suffice.

If the free bleeding and the hot fomentations, the calomel and active injections do not succeed, it will be proper to apply thirty to fifty leeches over the abdomen, and then to continue the calomel every four hours, and to follow it with other purgatives, as croton oil, in drop doses, every two or three hours. Sometimes calomel and opium combined will act very happily. When all these fail, the tobacco smoke, or infusion injection, may be employed. A drachm of tobacco and a pint of boiling water make the infusion, one-fourth of which to be thrown up at once, the residue in like portions, in an hour or two, if necessary. Besides this device, we may dash cold water from a height of several feet on the naked abdomen of the patient, repeatedly. This has succeeded in opening the bowels when all other means were unavailing.

If opiates are to be given at all, let them be introduced endermically, as it is the only safe way.

During convalescence, the patient must be carefully protected against all vicissitudes of weather, the abdomen and feet especially. The diet must be light, very digestible, and at the same time nutritive. Well prepared mush and milk, an occasional bowl of well-cooked sago, and similar articles, may precede for a day or two the more nutritive and tender animal aliment, as chicken and lamb, all of which should be taken in small quantities, during the first week of convalescence.

Chronic enteritis is a disease of long standing, and is almost always associated with some cutaneous eruption, or ulcers on the extremities. The patients so diseased are always in their best health when the eruption is most troublesome, and the ulcers are pouring forth most freely, and quite painful; a fine illustration of the sympathy subsisting between the skin and bowels.

All ulcers are not necessarily connected with intestinal inflammation; but when a patient affirms that he feels best when his ulcer is open, and badly when it is gradually healing up, and worse still when quite healed, we may justly suspect some internal disease, and that disease is likely to be chronic inflammation of the bowels. But if in addition we find the skin harsh, thirst greater than natural, the appetite defective, some nausea, fullness and oppression in the abdomen, especially if the latter be augmented after taking a cold drink or a meal, constipation and diarrhœa alternating, the evacuations fetid and almost colorless, the tongue furred, red at the tip and edges, or red all over, or merely furred and covered with elevated papillæ at the root; if these symptoms or any of them are present, and an ulcer nearly healed, or a cutaneous eruption suppressed, we may well suspect that the mucous membrane of the intestines is diseased, and probably laboring under chronic inflammation.

The *treatment* of this chronic inflammation depends upon the degree of its severity. It is rarely necessary to use the lancet. Ten or twelve leeches, every other day, applied to the umbilicus, the warm bath, gentle laxatives and enemata, a bland diet, with as little fluid as may be, and the careful avoidance of a large meal, are important items. Long-continued counter-irritation, as with tartar emetic ointment, or the pustulating liniment of croton oil, already spoken of, will sometimes be indispensably necessary.

OF DYSENTERY.

By this term, we understand inflammation of the mucous lining of the large intestines. The terms *colitis* and *colonitis* have been also in use, denoting inflammation of the colon. Dysentery, or colitis or colonitis, has been divided into the *acute* and *chronic* forms. We shall notice the acute form first.

Symptoms.—There is at first mere abdominal uneasiness, which soon grows to actual pain of a griping character, referred to the umbilical region, accompanied with inclination to go to stool, and partial relief from the evacuation. These appear very early in the attack in most cases. The griping pains alluded to are sometimes called *tormina.* It may sometimes happen that the desire to have a stool does not differ, in any circumstance, from that of simple diarrhœa, and the discharges are obviously feculent. The relief gained by evacuations is very transient, as the disease is more fully developed. The desire to go to stool becomes more frequent and importunate; the thin, mucous, and somewhat bloody-looking secretions being blended with lumps of scybalous matter. The blood discharged is sometimes florid and pure, but more generally mingled with shreds of mucus or albumen. Occasionally there is not more blood poured out than will give a dirty red tint to the rest of the mass, and the whole will then resemble water in which bloody flesh has been macerated. The scanty evacuations, often found in this disease, give uneasiness rather than comfort or relief; and the patient is constantly impressed with a belief that there is something in the canal that should come away, and the discharge of which would be very salutary. Of course, he becomes restless and fidgety, over-anxious to have medicine to relieve him, and very probably will take something of his own suggestion to procure the desired end.

If the disease be not checked, either by suitable treatment or by nature, the tenesmus and the griping will be sure to increase, and the whole belly will be hot and tender to the touch. In more advanced periods, the stools are more fetid and dark-colored, containing whitish lumps of a semi-purulent character. The rectum, being in all severe cases very deeply implicated, involves the bladder sympathetically, so that the patient is distressed with difficulty in urinating, and with frequent inclinations thereto. In addition to, or connected with, the local symptoms named, we have others that are general or constitutional. And of these the most important is fever. This fever may be symptomatic, and often is so, not appearing until the local affection has acquired considerable intensity. It is supposed that this is particularly the case in sporadic dysentery. But the disease may be introduced by febrile symptoms, with the usual forerunners, rigors and general uneasiness. In all such cases, you will find the tongue quite furred, sometimes coated with a dark crust, the cracks showing a dull crimson hue beneath. The lips are often cracked and dry; the countenance indicating much mental depression.

The danger as well as severity of the disease are co-extensive with the tract of intestine involved. It has been generally believed, although *post-mortem* examinations have not settled this point, that the lower part of the colon, and perhaps the rectum, are affected in mild cases, and then the symptoms are entirely local, or nearly so. If we could certainly know that the disease was thus limited, we might well infer its comparative harmlessness. If there be much pain and tenderness reaching above the pubes, and along the course of the descending colon, we should consider the case more embarrassing. And if there be tenderness and actual tightness in the epigastric region, as well as the soreness below, and if, on examination, we find it quite probable that the arch of the colon is involved, the case is still more precarious. But if we conclude that the whole course of the great intestine is involved, the danger is extreme. There is, generally, a close relation between the extent of the disease and the constitutional disturbances, as quick pulse, great thirst, anxiety, vomiting, hiccough, with rapid failing of the vital energies.

Diagnosis.—There is very little probability of confounding dysentery with any other disease. And yet I have known it treated for diarrhœa. As it does not always in the beginning present the peculiar stools or tenesmus, it may be mistaken for diarrhœa; but in most cases the inflammatory symptoms will sufficiently indicate its cause and seat. The severer form is to be distinguished from the milder by the seat of the latter chiefly in the rectum, the intensity of the inflammatory symptoms in the former and the peculiarity of its products. Cholera morbus is distinguished from dysentery by the bilious vomiting and diarrhœa, and the spasms of the extremities. There can be little danger of mistaking dysentery for hemorrhoids. In the latter, you can find tumors externally or internally; and the pure florid blood discharged, the sero-mucous exudation, with the pain at the termination of the rectum on going to stool, should serve to prevent confusion or mistake.

Prognosis.—We may predict a favorable issue if the stools after having been mucous and bloody change to be bilious and feculent, especially if the tormina and tenesmus very much abate.

We augur unfavorably if the following symptoms be present, viz., a tumid, tense and tender abdomen, the skin dry, harsh, unequally warm, or moistened with cold perspiration, and of a lurid hue; the finger nails somewhat livid, the patient on the back, the legs drawn up, the eyes sunk, cheeks collapsed, mouth half open, sordes coating the teeth and gums, the tongue red and shining, or chafed and raw, great prostration, involuntary stools, and these of a claret color and smelling very offensive, scanty urine with a copper color, the pulse very rapid, small and weak, muttering delirium, subsultus tendinum. We may find all these present, and yet no obvious disturbance of the mind. If there be no visible amendment in the local or febrile symptoms soon after the seventh day, we are to regard the case as quite doubtful; if these improvements are not found by the fourteenth or seventeenth day, there is great danger of a fatal issue.

Causes.—Age does not appear to have any control over this disease. All ages and both sexes are liable to its attacks. Those persons are most apt to be seized whose vital powers are greatly depressed by fatigue, watching, or anxiety. The most frequent exciting causes are such as act directly on the alimentary canal; as, for instance, acid, unripe fruits, unwholesome bread, diseased grain, drastic purgatives, putrid flesh, water used as drink that has been polluted by animal matter in a state of decomposition. There can be no doubt that putrid exhalations may induce the disease, and in this way it is probable that the cases multiply in confined places by the morbific exhalations from the bodies of those laboring under the disease. Sudden checking of free perspiration has induced it, and hence Sydenham called dysentery a fever thrown into the bowels from the skin. Exposure to cold and moisture, especially during the night in hot climates, is a prolific cause of the disease. It is for this reason that dysentery makes such fearful ravages amongst encamped armies. Some have assigned *contagion* as a cause of dysentery, but there is no valid evidence to support the doctrine. That it cannot be essentially contagious is clear from the fact that in the great majority of cases there is not the semblance of contagion. It is only in the exceptions or rare instances that contagion even seems to be operative. There are causes in abundance without resorting to such intangible matters as contagion. That the disease sometimes prevails most alarmingly as an epidemic is undoubted; but this is no sort of evidence to prove contagion, else intermittents of all grades would be placed in the list of contagious maladies. There is no necessary connection between an epidemic and a contagious quality.

Treatment.—When this disease is wholly uncomplicated, the indications of treatment are quite obvious. They resolve themselves into the means proper to *reduce local inflammation*, and such as are proper *to alleviate the more distressing symptoms.*

To meet the first indication, there is no remedy so suitable in many cases as blood-letting, general and local. Unless there be very clear contra-indications, we may, if called early, employ the lancet or leeches, or both, to advantage. It is not often that bleeding from the arm must be repeated, but this should be governed not so much by the loss of blood as by its effects. It is proper also to apply leeches to the abdomen along the arch of the colon, and especially to the margin of the anus. If the pains continue, the leeches may be repeated several times. Very shortly after the leeches have been removed, hot fomentations will often be exceedingly soothing; but I have found more relief from a light soft mush poultice, large enough to cover the whole abdomen, as hot as can be borne, and renewed as it begins to get cool. There can be no valid objection that I can discover to the use of blisters to the abdomen, if the other applications do not relieve. Where all these have failed to quiet the uneasiness, fomentations of infusion of tobacco have been employed, made of four ounces of tobacco leaf infused in four pounds of hot water.

It is well known that in many cases of dysentery, the spasmodic action of the bowels causes the retention and hardening of fæcal matter, constituting what are called scybala; and it is quite probable that when the disease is early marked by an apparent feculent diarrhœa, it depends on the gradual breaking down and solution of some of these scybala. And it has happened that where these scybala have passed down and impacted the rectum, there has been a thin feculent discharge which practitioners have mistaken and treated for diarrhœa, as we said in another place. Old practitioners have made this blunder.

I am quite satisfied that this disease originates or begins with an altered, a depraved, a morbid state of the mucous membrane of the colon, setting up a depraved secretion, which is not soothing as it should be, but exceedingly acrid. And I am of opinion that after general and local bleeding to subdue inflammation and relieve pain, we cannot do better, at least in many cases, than to give our patient, after the manner of Sir John Pringle, five grains of ipecacuanha and five of calomel mixed, every half hour, until free evacuations are induced by vomiting and purging. The action of this medicine is to clear off the depraved mucous secretion, and to correct the action of the secreting, surface and to evacuate. We shall often find the discharges cleared entirely of every vestige of blood by the use of this medicine, and the general uneasiness relieved. I suppose, of course, that the other means previously named have been duly employed.

The mere evacuation of the bowels is not with me so prominent as the correction of the depraved secretions. The use of the lancet and leeches will often unload the congested or inflamed vessels, and bring on free evacuation independently of any sort of cathartic medicine. Some physicians have been and are very partial to castor oil alone or with laudanum. I prefer the oil and laudanum mixed, because I have again and again witnessed more pleasant results than from the oil *per se.* The laudanum controls spasmodic action, and thus prepares the way for the free action of the oil. Ten drops added to an ounce of the oil will generally suffice.

Opium has been a fashionable medicine in the management of dysentery. It has been given largely alone after copious bleeding, preceded by some sort of cathartic, as castor oil. It has also been given with calomel; half a grain with two grains of calomel every three hours. The hyd. cum creta is a good substitute for the calomel. If the bowels have been freely evacuated, ten grains of Dover's powder with two of blue mass will be serviceable in many cases. In hot climates, it is quite common to give scruple doses of calomel alone every hour or two hours, with the effect of allaying the irritation. But in this country we are not in the habit of using calomel in this way. It is much more common to give calomel alone, or with opium in doses sufficient to touch the mouth and produce a constitutional impression. Let me caution, however, against this practice in subjects that are evidently scrofulous. It always does harm.

It is exceedingly important to keep up as natural a state of the skin as possible. Sydenham aimed always to restore the perspiration, the suppression of which he supposed to be a common cause of dysentery. The warm bath may be employed every day; at the same time, administering some of the saline diaphoretics, as a solution of carbonate of potash, with addition of Dover's powder or opium. Or, we may give ipecacuanha in divided doses every two or three hours. It not only corrects the secretions, but allays irritation when given in doses of five grains, three or four times a day or oftener.

A practitioner who has spent a good deal of time in India recommends very strongly the use of croton oil in dysentery, on the ground that the gall-bladder is exceedingly congested, and that thence all the symptoms flow. He gives five drops of croton oil, and four grains of opium every four hours, and calls the mixture a sedative cathartic, acting by effectually unloading the gall-bladder, and enabling the liver to pour out a due quantity of bile.

The second indication is to relieve the more distressing symptoms.

The tormina and tenesmus are exceedingly troublesome, and our chief resource here is opium, or some form of opiate medicine. A full dose of Dover's powder will often answer very well; but this may induce sickness of stomach, and if so, we should substitute a dry pill of opium, or a pill of a salt of morphia in its place. If an injection of arrowroot, or starch, or gruel, not over two or three ounces, with from thirty to sixty drops of laudanum, can be thrown into the rectum and be retained, it will control these unpleasant symptoms. As a substitute, we may employ a suppository to which opium has been added, to the extent of three or four grains.

It is sometimes judged necessary to control at the same time the tenesmus and the discharge of blood. Acetate of lead and opium will accomplish this very happily. But we should never administer this medicine in the early stage before we bleed generally or locally. We may give from two to five grains of sugar of lead, and one of opium in pill or solution, as may be most agreeable.

To control the exceedingly fetid quality of the discharges, and at the same time to correct the condition of the mucous membrane, it is well to add to the ordinary injections one or two drachms of liquid chloride of soda; or to give a weak solution of this article internally, several times in the course of the day.

The disease having been subdued by the various means already spoken of, it is important to restore the enfeebled tone of the mucous membrane of the bowels. This is often best secured by the use of infusion of quassia and lime-water, a tablespoonful of each mixed to begin with, and taken three times a-day. Sometimes a moderate use of the elixir of vitriol will be found beneficial; five drops in half a tumbler of water, three times a-day.

We meet with cases of dysentery now and then, especially during its epidemic prevalence, in which there are great debility and prostration from the beginning. In such cases, we may not be able to deplete at all, or at most very sparingly, and we are obliged to administer stimulating purgatives, as castor oil with spirits of turpentine. And it may also be needful to administer the liquid ammonia occasionally, and even to give wine whey. In these cases, hot fomentations to the abdomen are very important, perhaps indispensable.

The diet of dysenteric patients should be of the lightest kind, and taken in very small quantities. Toast water, thin gruel, barley water, gum water, very thin arrowroot, a few tablespoonfuls at a time. When the patient is convalescing, I have known the sly use of buttermilk, contrary to the advice of the physician, to be greatly conducive to recovery. It will very much add to the comfort of all concerned, if the patient's stools be passed into a chamber containing cold water, into which a tablespoonful of the chloride of lime has been thrown.

It is very important, also, to have every vessel used for stool removed as soon as possible from the apartment; this is especially necessary, if several be sick in a house at the same time. The utmost regard should be paid to cleanliness, and it is well to sprinkle chloride of soda over the apartment freely, every day, and to place saucers full of chloride of lime in various parts of the chamber. Contagion cannot live in such a place.

Anatomical Characters.—I have said nothing special as to the condition of parts after death. This is exceedingly various.

In Ireland, during an epidemic prevalence, Dr. Cheyne found the mucous membrane of the colon to present marks of inflammation, almost invariably, and the liver to be as uniformly sound.

In our own country, the large bowels are found to be very much thickened. This thickening not unfrequently extends to the entire colon and rectum, though confined sometimes to the caput cæcum, and part of the ascending colon; it also occasionally involves the arch of the colon. The seat of the thickening is in the mucous coat, and sub-mucous cellular tissue, which are found to be infiltrated with blood, quite spongy, and presenting a rough, ragged surface. The color varies from bright red to a dark brown. Sometimes deep ulcerations are seen, and these run mainly in the course of the transverse bands of the colon. Now and then, spots of complete mortification have been found, large portions of membrane being detached, and the gangrene being very manifest from the color and fetor. In this country, the rectum is not often seriously affected, as it is in tropical regions.

The *Chronic form of Dysentery* next claims our attention. We remark, in the first place, that the *anatomical characters* differ very little from those found in the acute form; and therefore we shall not repeat on that point. In many respects, the chronic resembles the acute form of the disease.

We shall speak only of the symptoms and treatment of chronic dysentery.

The Symptoms.—The more common cases of chronic dysentery to be met with are in persons who have arrived from warm climates, where they had suffered one or more attacks of the disease. Perhaps they were badly treated, or were inattentive to the means advised, both curative and preventive.

In chronic dysentery, the patient has frequent severe fits of griping at the umbilicus, very much like colic, and these fits are soon followed by irresistible desires to go to stool. Yielding to the inclination, a large quantity of flatus is forced out, together with some very dark brown feculent matter. Sometimes the discharge looks a little like dirty yeast, or it is not very unlike rice water. In some cases, there is merely an unpleasant sense of weight in the abdomen, though frequently an acute pain is perceived, on pressure, in the course of the colon, and especially in the region of the caput cæcum. A paroxysm of pain having passed by, and a stool obtained, the patient has an interval of ease. The chief unpleasant sensation, just now, is the scalding at the anus set up by the acrid nature of the evacuations.

The skin becomes parched and the pulse is accelerated. Appetite is impaired in most cases, and often the patient finds himself to be worse after eating a pretty full meal, and perhaps he will complain of nausea. He is almost always thirsty. If you examine the tongue, you find it covered with a yellow fur all over, or it will be coated in the centre and red at the tip. Sometimes it is rough, looks red and raw, and occasionally very much glazed. If there be no obvious amendment for twelve or fourteen days, you will then find the stools to consist chiefly of a whitish mucus, blended with some undigested food. The tormina increases, the borborygmus is quite annoying, and a loathing of all kinds of food is now manifest. The patient is often sick at stomach, and has more or less of bilious vomiting; his thirst, debility, and emaciation augment daily, and presently hiccup troubles him sorely. The pulse becomes more and more rapid and feeble, the skin seems to be permanently sallow, and the patient soon dies. Sometimes just before death you find much tumefaction, and occasionally decided flattening of the abdomen. If perforation of the gut takes place, as it sometimes does, the patient will die of acute peritonitis, induced by the escape of the contents of the bowels into the peritoneal sac.

The Treatment of Chronic Dysentery.—These cases have been regarded as hopeless, and it must be conceded that, when there is decided and long-persistent hepatic obstruction, we can do but little. In any case, however uncomplicated, it is rare that general bleeding can be practiced. We may, however, very safely and profitably apply from twelve to twenty leeches to the abdomen. All the forms of counter-irritation, in their turn, have been employed successfully, at least as palliatives. It is needful to exhibit an occasional gentle laxative, as blue mass and rhubarb, or castor oil, and now and then an opiate. Or, we may sometimes combine the laxative and opiate to advantage. When there is obvious debility and atony of the mucous membrane, we may resort to catechu, sugar of lead, and other astringents. It is of great importance to regulate the diet all the while, both as to quantity and quality. Small meals of light, digestible food may be taken, with five or six hours of interval. Boiled milk, with sugar and nutmeg, will be proper; also, arrowroot or sago, well prepared. An occasional injection of milk, in which mutton suet has been boiled, is very important. If retained, as it often is, the patient will be nourished, and the bowels much soothed.

The occasional use of the warm-bath is a valuable aid, and it may be employed every day, or every other day. Perpetual drains from the abdominal surface, by tartar emetic ointment, guarding the surface by the use of flannel next the skin, and avoiding all offending agents scrupulously, will very much contribute to a favorable issue.

INFLAMMATION OF THE CÆCUM AND APPENDIX VERMIFORMIS.

This affection may occur in dysentery, but it has been found to exist alone. And although it is comparatively infrequent, it is always a very serious affair, and every medical man should have some acquaintance with it.

The Symptoms.—The patient may have complained a little now and then, for some time past, of pain and uneasiness in the right iliac region, and he may have suffered even more, if he has permitted himself to become costive for two or three days, or if he has indulged too freely in drinks or in the good things of the table. Perhaps he has not allowed himself to lay by on account of his feelings until after a long exposure to severe cold, or a long walk, or severe exertion, he has been very suddenly seized with much more intense pain accompanied by rigors, chills, and it may be with sickness and violent vomiting. Soon the pain and tenderness become excessive, insufferable, and reach to neighboring organs. A slight examination will suffice to detect hardness and tumefaction. If this state of things be suffered to continue, we have soon all the symptoms of acute peritonitis with fatal issue; if the treatment be as it should be, the inflammation will be circumscribed, even less extensive, and may end in a local, deep-seated abscess. This is not a necessary result, however.

If the abscess really form, we shall find, after the symptoms of peritonitis abate, that signs of pointing are manifest, just above the crest of the right ilium. After awhile, it may open spontaneously, or be opened with a lancet, and some ill-conditioned pus having escaped, the peculiar fetor of feces will be obvious, and we shall find the pus mixed with feculent matter. The discharge may go on for weeks, and the patient sink from exhaustion. If the powers of the system are unimpaired and the general health good, the abscess will heal, and the patient may have a happy recovery.

Anatomical Characters.—Repeated post-mortem examinations have proved that the fecal abscess formed in the right iliac region has its origin, in most cases, in disease of the cæcum or its appendix. This organ is proved to be highly susceptible of inflammation, ulceration, and even gangrene. It is also subject to thickening and ulceration from tubercular deposits, in persons of a scrofulous diathesis. The worm-like appendix may be seen in the midst of the abscess with a perforation at its extremity.

The extent of the abscess and the complication with diffused peritoneal inflammation will be influenced by a variety of circumstances. Seldom is the abscess found perfectly insulated, as the kind of matter contained within it forbids anything like a healthy adhesive process. Yet it may be circumscribed towards the cavity of the peritoneum, while it burrows behind that membrane, finding its way into the surrounding cellular substance, so as, occasionally, to point at a considerable distance from the original source or seat of the disease.

The Causes.—The secretion from the lining membrane may become diseased and set up inflammatory action. Sometimes stricture, amounting nearly to occlusion of the cavity, has been detected, and the extremity of the gut has been distended by its own secretions. We may have inflammation from that cause. Sometimes, there are small oval masses of feces impacted in the canal, and these have, no doubt, set up irritation which has progressed to inflammation. It has happened, that a foreign body, a cherry stone for instance, has been found in the appendix vermiformis, and this would be amply sufficient to set up inflammation. Perhaps a more common cause is the formation of a peculiar concretion, moulded to the cavity of the canal, composed of coats or layers of earthy phosphates, with occasional alternate layers of animal secretion or feculent matter.

These concretions vary in bulk, and at length set up high irritation and inflammation, with thickening and ulceration. I know a physician who has had five or six severe attacks of inflammation of the cæcum, and it would seem that a predisposition has been established, so that his liability to repetitions of the disease is very great. He has always brought it on by undue fatigue, in hunting or fishing, the perspiration being suddenly checked and more or less of chilliness induced. The irregularity and unusual quality of his food, at those times, no doubt aided to bring on the result.

I have known a very severe attack induced in a child by overstuffing with nuts and raisins which seemed to block up the cæcum. Emetics, injections, and the warm bath persisted in, subdued the inflammation promptly.

The Diagnosis.—We can scarcely be mistaken in respect of this disease. If one has previously had it, we feel confident that he has it again, if the right iliac region be the exclusive seat of distress. There is no other feature that will be so certain as this. And in a fresh case, if there be constipation, and the disease has attacked suddenly, and the suffering is referred to the right iliac region, deep seated and fixed, we are pretty safe in making a decision. If the abscess actually form and open, and we find the purulent and feculent mixture already spoken of, the justice of our decision is confirmed.

The *prognosis* must be influenced a good deal by the previous habits and health of the patient, his age, &c. If these be favorable, we may give an opinion equally so. The mildness of the local symptoms and the absence of peritoneal inflammation constitute very desirable features. But if there be great prostration, extreme abdominal tenderness, sick stomach, purging, and hiccup almost constant, the prospect is decidedly bad. And if a fecal abscess be formed, we may be sure that, even though the patient get well, he will have a slow recovery, and we should give a doubtful prognosis under such circumstances.

The *treatment* divides itself into *general* and *local*. The general management must be governed by the degree of constitutional sympathy and the extent of inflammatory action. In a man who has enjoyed good health, we may safely, if called in immediately, resort to the lancet, and we should at once follow this with a liberal application of good leeches to the region specially affected. It may be needful to repeat the leeching. I believe many persons might have been saved from abscess by a fearless use of the lancet and leeches. I would push the one and the other as far as practicable. Then we should make use of fomentations and poultices, as hot as can be borne, unless the patient strongly object to the heat and prefer cold applications, which is sometimes the case.

It is vastly important to unload the bowels, by the use of mild yet efficient cathartics, as castor oil and turpentine, an ounce of the former to half an ounce of the latter, followed by injections of soap suds, water gruel, thin starch or broth, in quantities large enough to insure the complete evacuation of the large bowels. With the exception of motions of the bowels, thus necessarily set up, it is desirable to avoid disturbing the affected parts as far as possible. It is therefore desirable to forbear pressure on the region affected, any further than is absolutely unavoidable. Our main object is to cure the inflammation, and to prevent the formation of an abscess, and therefore all we do should have that end in view.

If it be impracticable to prevent an abscess, the next thing to be attended to is to open it carefully as soon as there is any sign of pointing, and then, by soft poultices, to favor the discharge of its contents, so that the surrounding parts may take on healthy action as soon as possible. In the mean time, the action of the large intestines must be encouraged by mild injections, and the general health at the same time maintained. The constitution and age being favorable, the abscess will, in due time, be closed. If the peritoneum take on active inflammation at any time in the history of the disease, it must be treated as other cases of peritonitis.

TENESMUS.

This is defined to be a painful forcing down of the lower bowel, after every intestinal evacuation; and, although it is often a troublesome accompaniment of dysentery, it is frequently met with in children who have been stuffed with fruits and other articles that have proved indigestible. More or less uneasiness is complained of prior to stool, it may be; and, during the effort, the distress is augmented by the acrid quality of the discharges, and the irritation thus begun continues, and is augmented even, after the fecal matters have passed. The irritation prompts to severe straining, and this may be so often repeated as to induce high nervous excitement. The inclination to stool is often delusive, and results from flatulence which escapes alone, not a particle of feculent matter following, it may be.

If the chamber vessel be inspected after quite a long sitting, it will be found to contain very little feces, and frequently we find a light-colored, thin substance blended with mucus and a little blood, the former being part of the chyle driven forward by the intestinal activity and lost to the system. This loss of nutritive matter, frequently repeated, together with the enervating nature of tenesmus in all its aspects, may serve to account for the decided emaciation so often perceptible. It is not to be wondered at that such a state of things should induce some fever, thirst, heat, and dryness of the surface.

The Treatment.—In almost all cases, it is important to evacuate the bowels by Epsom salts or castor oil, and, after this has been accomplished, the diet should be of the lightest kind, so as to prevent costiveness, and also to soothe the mucous membrane. Well prepared sago, arrowroot, tous-les-mois, and the like, are very suitable, and we may add a few drops of essence of ginger, to make the mass more grateful to the stomach and bowels.

Sometimes we afford relief by repeated injections of warm water, or of emollient solutions, as slippery elm infusion, adding a few drops of laudanum, according to the age of the child. The hip bath, as hot as it can be borne, is also a good adjuvant, and should not be overlooked. I have often afforded signal relief by applying to the anus a roll of fine carded cotton soaked in equal parts of warm sweet oil and laudanum, and repeating this every hour or two. Hot fomentations to the entire abdomen are sometimes beneficial.

PROLAPSUS ANI.

THIS is sometimes a troublesome affair, and young mothers are often greatly alarmed by it. It is the result of very frequent straining, associated, not unfrequently, with general debility and long-continued laxity of the intestinal tube. Not only is the mucous coat of the bowel thickened in some parts, but there is often seen very manifest dilatation, giving the idea of a preternatural growth of the lining membrane. This state of things sometimes gives rise to a visible tumor at the orifice of the anus, constituting what has been called a *permanent* prolapsus.

The *treatment* is various. Thus we may sometimes succeed by withholding food for a season, emptying the lower bowels by a small injection of warm water, and then administering an injection of thin starch and ten drops or more of laudanum, to control intestinal irritability, having first pressed up the prolapsed bowel. In some instances, the protruded gut may have been down a long while, and deep congestion or slight inflammation may have taken place. Under such circumstances, the reduction of the prolapse may be a little difficult. I have found, however, that a few drops of antimonial wine to excite nausea, and persistent pressure with cloths wrung out of warm water, or lead water, will generally succeed. The whole system is relaxed by the nausea, and the tumor often subsides under that influence. There is a double advantage in the use of sugar of lead here, viz., its power to control inflammation, and its astringency. The latter, by a sort of mechanical agency, helps to prevent a recurrence of the affection.

In some cases, the long continuance of prolapsus ani is owing to a loss of nervous power, and to rectify this condition, Dr. Schwartz and others have employed the extract of nux vomica or strychnia with very happy effect. Two grains of the extract may be dissolved in two drachms of water, and of this solution a child of four or five years may take a drop once every three or four hours, gradually enlarging the dose. Or a grain of strychnia may be dissolved in half an ounce of acetic acid, and five drops may be given four times a-day. The good effects of these articles will be visible in a week, if at all.

Some obstinate cases have been cured by cutting off superfluous folds of membrane with sharp scissors. When the tumor has assumed a permanently hard state, the actual cautery and nitric acid have been employed beneficially. During the whole management, the bowels should be kept in a regular state by means of castor oil or syrup of rhubarb.

DISEASES OF THE KIDNEYS, BLADDER, &c.

We believe that these diseases assail young children much more frequently than physicians suppose, and, being overlooked, are permitted to make fatal progress, or if treated at all, are managed so feebly as to fail utterly in accomplishing any desirable results. Believing that the subjects named in the caption of this item are really important in a work of this kind, we quote the following remarks from Coley's book on infants and children. And we call attention, first, to

"*Albuminuria, or Bright's Disease; or, Albuminous Nephritis.*—One of the most common diseases of the kidneys to which children are liable is the albuminous nephritis, either in the *acute* or *chronic* form. In the former, it appears as a sequel to scarlatina, or follows exposure to cold. It commences with chilliness, succeeded by heat, and accompanied with a dull pain, or sense of constriction in the region of the kidneys. The febrile state is also denoted by a quick pulse, and heat and dryness of the skin. The urine is soon observed to be deficient in quantity, and, on being compared with the secretion from healthy kidneys, it is found to possess less specific gravity, and to coagulate on the application of heat. These properties of the urine denote a deficiency of urea and salts, and the presence of albumen. The color of the urine is reddish, resembling water impregnated with blood, and it is always acid. At the very commencement of the disease, the urine often exceeds in gravity that of the healthy secretion. With the aid of a good microscope, globules of blood may be perceived floating in the urinary secretion. The tongue is furred, and the bowels constipated. In many cases, vomiting occurs, and at the end of a few days anasarca follows, producing an elastic, serous infiltration in the face and extremities, and in other parts. The blood, after venesection, presents a buffy appearance. This disease sometimes terminates spontaneously in perfect health; in other instances, it is succeeded by chronic pericarditis and dropsy of the pericardium, pneumonia, pleuritis, ascites, or fatal effusion in the brain. In some cases, it gradually advances into the *chronic* variety. This latter form of the disease is unattended by fever, and commonly appears without having been preceded by the acute variety, especially in scrofulous children. Under the latter circumstances, as soon as the albuminous urine is discovered, the patient will be found to have a pale, doughy complexion, and will complain of unwieldy swellings in the thighs or legs. His face will be puffed, and his upper lip hypertrophied and sometimes cracked, and he will complain of debility and depression of animal spirits. Sometimes the urine will appear as if mixed with blood, and it is always voided in small quantities. The skin, as in the acute variety, is uniformly dry. When the urine is exposed to about 166 degrees of heat, the albumen is deposited in crowds of small, yellowish-white coagula, and, in some rare cases, it forms a solid coagulum. Albumen is also deposited by the application of nitric acid and the bichloride of mercury. In consequence of the animal matter contained in albuminous urine, it undergoes decomposition, and becomes offensive much sooner than healthy urine. In all doubtful cases, the suspected urine should be subjected to the acid test as well as that of heat. As the disease proceeds, the specific gravity of urine diminishes, until, in some cases, it is reduced to 1,004,* and in its last stage the albumen almost entirely disappears. In the chronic, as well as the acute variety, dropsical effusions follow; but their appearance in the former is much more remote than in the latter. Their progress and termination are, however, much the same in both, after anasarca has commenced.

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* Christison.

The state of the blood is materially altered in the early stage of albuminuria; the serum being reduced in gravity from 1,030 to 1,020, and the solid portions from 100 to 60 in 1,000. As the disease advances, the coagulum becomes diminished, the buffy appearance is less observable, and the density of the serum increases, and the urea, which had disappeared, will be again discoverable in excessive quantity. The hæmatosine, or coloring matter, as the disease increases, is reduced to one-third of its natural proportion, whether venesection has or has not been employed, which is the principal cause of the pallid aspect of the patient.

The duration of the disease may extend to several months, or years; and when the appearance of albumen in the urine is the only symptom attracting attention, and the child appears ruddy, and in other respects well, there will be reason to presume that the morbid condition of the urine may arise from some temporary defect in the process of assimilation, and not from diseased kidneys. I have now a patient who is perfectly well in every other respect, except that his urine contains albumen, which it has done during several years without inducing any other apparent disorder in the economy.

The morbid condition of the kidneys is various. They may be found twice or three times as large as natural, increased in density, and marked externally with deep red points, their surface being also of a red color. This increase of bulk is found to depend on an increase in the cortical substance, and the dark red points arise from the glands of Malpighi, which are highly injected with dark red blood.* The mucous membrane of the cups and pelvis is injected with ramifying vessels. When the examination is conducted in a more advanced stage of disorganization, what Dr. Bright calls the *granular* state is found. The external surface of the kidneys is then of a yellowish color, and dotted or covered with white or yellowish spots. These granulations are seated in the cortical substance, and are most conspicuous at either extremity of the kidney, and are seen, on dividing the organ, to descend through the cortical structure, appearing like irregular fleecy lines continuously with the striæ of the tubular cones. In some cases, the Malpighian glands, infiltrated with albuminous deposit, appear externally in the shape of small grains under the investing membrane of the kidney, which is thickened and strongly adherent.

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* Rayer.

The proximate cause of albuminous nephritis is involved in much obscurity. It has, however, been, in a great majority of cases, found to prevail in scrofulous subjects, particularly in children; and the disturbance in the elements of the blood, which is one of the most obvious proofs of its existence, may lead us to conclude that it is primarily dependent on some defect in the processes of assimilation and sanguification. In some young patients, however, who appear to be free from congenital predisposition, the disease is frequently excited by exposure to cold, without any antecedent cachexy. In these cases, the immediate cause of the disease is a congestion, excited in the kidneys by exposure to cold. Independently of renal disorder, or disorganization, we sometimes meet with cases, as I have before stated, in which the urine is found to be albuminous; and, therefore, that condition of the urine must not alone be considered as indicative of albuminous nephritis.

Treatment.—The acute form of the disease will require in the first instance loss of blood, either from the arm, or by cupping in the loins; and the same practice should be adopted in the chronic variety, before the anasarca is extreme. Jalap and supertartrate of potash should be administered every morning, and when the dropsical effusion resists these means, a quarter or half a grain of elaterium may be given every third morning. As the kidneys in this disease discover a particular propensity to be morbidly excited by mercury, all preparations of that mineral must be prohibited. Neither in this nor any other inflammatory dropsy will any of the stimulant diuretics be admissible, their proper action being to give tone to the arteries, and thereby to augment serous exhalation arising from congestion. Other medicines, having the repute of acting as diuretics, have little or no influence on this disease, and this cannot excite surprise, when we reflect on its nature and cause. When the disease is evidently connected with scrofula, hydriodate of potash will be found a most valuable remedy. I have a boy now under my care afflicted with the chronic variety of the disease, who, after moderate venesection, is rapidly improving from the exhibition of this medicine in the dose of two grains twice a-day. All the anasarca has been removed, but the urine remains albuminous. This boy has a scrofulous aspect, and scrofulous disease in the absorbent glands. In the advanced stages of albuminuria, the mucous coat of the bowels sometimes becomes inflamed or ulcerated. The proper remedy for the former state, which is attended with diarrhœa, is opium; and for the latter, that medicine in combination with sulphate of copper.* The extension of this disease to the bronchial mucous membrane, or to the pericardium, is highly dangerous, and must be viewed as a fatal association of the disease.

Fungoid Disease in the Kidneys.—The primary symptom of this rare disease is a discharge of bloody urine, which resists all remedies. On careful examination, a fungoid enlargement will be found in the region of the affected kidney, extending below the hypochondrium. The countenance has a pallid and morbid appearance. Fungoid tumors usually occur also in the inguinal glands, as the disease advances. The quantity of urine secreted and discharged is profuse, and it is sometimes free from blood. The pulse varies from ninety to one hundred. The disease is not attended with anasarca. Its duration is sometimes extended to several years. It attacks children as well as adults, at all ages. A case, which occurred to a child four years old, is related in the *Medical Gazette* for May, 1831.

Treatment.—The only medicine which has appeared to me to exert any effect upon the discharge of blood is benzoic acid, which may be given in the dose of five or ten grains three times a-day. We have, however, no specific for the cure of the disease, which invariably ends in the death of the patient.

Nephritic Calculus, or Gravel.—The only species of crystaline sediments, or gravel, which are usually met with in the urinary discharges of children, are the uric acid and the fusible, or the gravel, composed of a mixture of lime and triple phosphate of magnesia and ammonia. The uric or lithic acid gravel is of a brown or reddish color, resembling the grains of the new red sandstone. Its chemical characters consist in its becoming black before the blowpipe, exhaling during conflagration a peculiar odor, and leaving a white ash. This white ash residue speedily dissolves in diluted nitric, or in citric acid, with a slight effervescence. The solution tastes like nitrate of potash. This gravel dissolves in liquor potassæ, and, with the assistance of heat, in nitric acid. The acid solution, evaporated to dryness, leaves a residue of a pink or carmine color, which instantly disappears on the re-application of diluted nitric or sulphuric acid. It may be collected on paper, and, on being moistened and rubbed with water, it imparts a rich pink stain to the paper, as if it proceeded from a water-color.

The fusible or phosphatic gravel is whiter than any other, and resembles acetate of lead on its appearance. It is composed of very minute crystals, which melt before the blowpipe. It is readily soluble in acids, particularly in muriatic. The discharge of this calculous matter is generally accompanied with mucus in children, which often gives it the appearance as if it were matted together, and connected with minute hairs. This disease is vulgarly and erroneously supposed to proceed from dentition. This gravel is generally attended with pain about the pelvis, and more or less dysury, which symptoms are also especially attributed by ignorant persons to the process of dentition.

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* ℞.—Pulv. opii,
Sulph. cupri, āā grs. ij;
Cons. rosar, q. s. To make eight pills.

The cause of both of the above species of sediment is a disordered state of the stomach and bowels, which produces imperfect assimilation.

Treatment.—The lithic acid gravel will be readily dissolved by five minims of liquor potassæ, or five grains of sesquicarbonate of soda, given twice a-day, in an ounce of infusion of uva ursi. Two or three grains of chloride of mercury should be taken every third night, and a draught of infusion of senna and potassio-tartrate of soda the following morning. The patient must be prohibited from eating acid and unripe fruits, and pastry of every kind.

The best treatment for the triple phosphatic gravel is five minims of hydrochloric acid, in half an ounce or an ounce of water, three times a-day, and lemonade *ad libitum*. These will rapidly remove the appearance of the calculous deposit, but its reproduction will require other remedies. These consist of chloride of mercury and rhubarb, or jalap, which must be administered so as to operate freely on the bowels every third morning, and be continued until the child has recovered a healthy appearance, and a natural appetite.

Vesical Calculus.—When this disease is not congenital, it may always be prevented by timely attention to the urinary deposits; and since the publications of Dr. Prout, and other modern writers on the subject of urinary gravel and calculi, stone in the bladder is an uncommon occurrence in children. The symptoms of this disease are severe pain in the orifice of the urethra, immediately after the evacuation of the bladder, or just as the last drops are passing. This pain arises from the inflamed and tender state of the mucous membrane, occasioned by the friction or contact of the stone, and is most severe when the calculus is composed of or coated with the rough particles of the triple phosphatic calculus. In severe cases, the last drops of urine are accompanied with blood, and the pain continues a considerable time after the bladder has been emptied. In boys, when the disease has been of long standing, a spasmodic contraction of the membranous portion of the urethra, which may end in stricture, is liable to occur, and, by inducing pain before the discharge of urine begins, may deceive the surgeon. In all cases, however, the characteristic elongation and itching of the prepuce, and pain after the discharge of the urine, will distinguish stone in the bladder from all other diseases. In the advanced stage of vesical calculus, prolapsus ani is a general accompaniment.

Treatment.—Very small calculi may be removed from the bladder by dilatation. When they are of any considerable size, lithotomy will be found necessary. This is a very safe operation in children, and may be performed at a very early age. I have operated with success on a boy only two years, and Mr. Key on a boy sixteen months, and he has also assisted at a similar operation on a boy only thirteen months of age.* Lithotrity is inadmissible on children under twelve years of age.

Strangury, or Inflammation of the Mucous Membrane of the Bladder.—Frequent and irresistible desire to pass urine, preceded by severe pain in the neck of the bladder, and mostly accompanied with a discharge of mucus, sometimes mixed with blood. This disease is distinguishable from stone in the bladder by the presence of pain before micturition, and by relief instead of pain immediately after that act. The inflammation is of the subacute kind; but it is occasionally acute, and terminates in sloughing, an instance of which occurred in my practice in a girl about fourteen years of age. It is sometimes connected with polypus in the urethra in young females, when offensive purulent matter is discharged, as well as viscid mucus, and the strangury is more frequent and urgent. In such cases, when the disease is overlooked or neglected, enuresis and low fever succeed. Sometimes the inflammation in the mucous coat of the bladder is of the aphthous character, when aphtha or muguet will be discoverable in the mucous membrane of the mouth, accompanied with fever, vomiting, and intense thirst, indicating the extension of the disease to the inner surface of the stomach. This is one of the diseases which is commonly but most erroneously supposed to be connected with dentition.

Treatment.—Simple uncomplicated inflammation, or catarrh of the mucous membrane of the bladder, should be treated with citrate of potash and a few minims of tincture of opium once in four hours, and five or six grains of compound powder of ipecacuanha every night, the bowels being relieved, when needful, by salts and senna. Warm barley-water or milk and water should be taken in abundance. When the strangury is urgent, relief may be speedily afforded by a suppository, consisting of half a grain or a grain of opium, which may be repeated once or twice a-day. [Nothing will so promptly relieve strangury in young or older subjects, as the warm bath and repeated injections of warm water, having previously emptied the lower bowels by cathartic enemata. We may add to one of these injections of warm water from ten to sixty drops of laudanum.]

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* Guy's Hospital Reports, No. 4, p. 17.

The acute species will require the early application of leeches to the region of the pubes, and should retention of urine occur from the obstruction occasioned by the presence of any portion of the slough in the urethra, the catheter must be employed twice or thrice every day. A young lady was under my care with this aggravated form of the disease who required the use of the catheter six weeks before the obstruction passed away, and she ultimately recovered. Nearly the whole of the mucous membrane of the bladder was discharged in this case in a sloughy condition.

When polypus is suspected, its presence may be ascertained by the finger introduced within the vagina. The tumor will thus be readily discovered by its large volume and the distension of the urinary passage. When the polypus projects, it may be secured by a pair of forceps, while a ligature is dexterously thrown round its neck; or the front of the passage may be dilated, and the tumor secured by means of a small canula. When the polypus is half an inch or more in thickness at its neck, it will require a second ligature before it is separated. After the polypous obstruction is removed, the patient rapidly recovers, but is afterwards liable to vesical catarrh.

The aphthous inflammation of the bladder and of the mucous membrane of the mouth, fauces, and stomach will require the citrate of potash in a state of effervescence, with or without opium, according to the state of the bowels. Barley-water, soda-water, or arrow-jelly constitutes the best diet during the disease. All stimulants must be avoided. An opiate suppository or enema may be introduced into the rectum twice a-day until the urgent symptoms of strangury are relieved; and if these should fail in affording temporary benefit, the hip-bath should be employed. In obstinate and chronic cases, twenty or thirty minims of tincture of opium mixed with a little barley-water may be injected into the bladder with the best effect.

Imperforate Urethra.—The urethra may terminate in a thin membrane in the situation of the proper orifice, or it may not penetrate through any part of the glans penis, ending abruptly in front of that part with a preternatural opening; or it may pass partially through the glans without any external aperture.

Treatment.—The membranous obstruction must be ruptured with the blunt extremity of a silver probe, and if any disposition to contract is afterwards observed in the orifice, a soft bougie of proper size should be introduced a little distance within the passage, and secured by a T bandage during an hour every day, until the contraction is removed.

When the glans is found partially perforated by the urethra, the part in front should be penetrated by a small trochar in the natural situation of the opening, and the new passage kept open by the constant use of the bougie, which must be carefully replaced every time it is removed either by accident or by the force of the urine. If the new opening is made larger than the rest of the passage, the current of the urine will not disturb the bougie. This, however, must be removed and replaced every day, and be gradually discontinued as soon as cicatrization has taken place.

The preternatural aperture should not be interfered with until the boy is of sufficient age for a more delicate operation, which may be performed on the principle practiced by the late Sir A. P. Cooper. This consists in paring the edges of the opening, and covering it with a flap formed from the adjoining integument, which must be twisted and accurately applied to the raw edges. A trochar must then be passed through the glans in the natural direction, so as to form a canal communicating with the urethra. Into this artificial opening, a small piece of an elastic gum catheter must be introduced, for the purpose of affording a passage for the urine, and retained by the use of a T bandage. The portion of catheter must be renewed as often as it becomes too soft for the purpose. Should the Taliacotian operation fail, the preternatural opening may be closed by the repeated application of nitrate of silver or the actual cautery; or it would probably contract spontaneously after the artificial opening has been established.

Phymosis.—The phymosis of infants is a congenital defect, consisting of a preternatural contraction of the foreskin, which is not sufficient for the current of the urine.

Treatment.—A sharp bistoury must be carefully insinuated between the prepuce and the glans, over the surface of the latter, and the prepuce divided at one stroke of the instrument. The surgeon must take care to pass the point of the bistoury close to the corona glandis before he pushes its point through the integuments, otherwise the contraction will return. A little lint must be introduced between the sides of the wound, and the divided parts covered with tepid water, until the cicatrization has been completed.

Paraphymosis.—This disease is a retraction of the prepuce, either entirely or partially over the glans penis. When it occurs in little boys, it is the result of accident, or of friction of the prepuce against a rough dress. Inflammation of the prepuce, and infiltration of serum into the cellular membrane, are the consequence. This infiltration is often extreme; the swollen parts appearing almost transparent.

Treatment.—When the prepuce is forced over the glands by accident, and the surgeon is consulted before inflammation has commenced, the prepuce may be restored to its proper situation by gently pressing it forward with two fingers, while the thumb supports the glans. In most cases, considerable swelling and inflammation will be found. Under these circumstances, no attempt should be made to replace the distended prepuce. A lotion composed of one drachm of liquor plumbi diacetatis, and a half pint of distilled water must be applied to the inflamed parts, which must be supported by means of a T bandage. This treatment must be pursued until the tumefaction has subsided, when the displaced prepuce will be found in every instance to resume its natural situation and appearance, without any manual operation or further interference.

Calculus lodged in the Urethra.—The symptoms of this accident are a fullness, and some degree of inflammation of the penis, a frequent and painful desire to pass urine, which escapes in drops, or dribbles slowly, and sometimes an evident swelling and induration in some part of the urethra towards its extremity, occasioned by the lodgment of the calculus.

Treatment.—When the stone is not perceptible by external examination, a soft bougie as large as the passage will admit, should be gently introduced into the urethra until it arrives at the stone, in which situation it must be retained a few moments, and then withdrawn a little, when a sudden inclination to empty the bladder will be felt; and if much urine escapes by the side of the instrument, it should be removed, when the stone will probably follow. Should not this happen, the bougie may be introduced again at the end of a few hours, and being brought into contact with the calculus, the latter may be gently pressed backwards, with the view of altering the direction of its longitudinal axis, in case that should lie across the passage. Should all these attempts fail, and the patient not suffer much uneasiness, the stone may be left in the urethra, provided the urine makes its way, and no retention follows. Under these circumstances, a regular course of alkaline or acid medicines, according to the ascertained nature of the calculous matter, should be prescribed, until the growing passage may acquire sufficient diameter to permit the calculus to pass. When retention of the urine takes place and is urgent, an opening should be made into the urethra, and the stone extracted. This is a safe operation, especially in children, in the membranous part of the urethra, which is the usual seat of the calculus. A case is related in the 'Lancet,' vol. xi. p. 91, in which the stone, after residing in the membranous portion of the passage during one year, was safely removed by incision. A similar case occurred in the practice of Mr. Green. The calculus had rested in front of the bulb, and was extracted by an opening made into the passage at the part, after retention of urine had been produced.* When the stone cannot be extracted through the natural orifice, Mr. Liston recommends it to be pushed backwards towards the perineum, as it is more difficult to heal a wound in front than behind the bulb, from which latter situation the stone may be safely removed by an incision, which heals without any risk. It must be remembered that at this situation the urethra lies deep and under the arch of the pubes, and, therefore, care must be taken to extend the first incision sufficiently far towards the anus to allow space for the future steps of the operation.† Sir B. Brodie also prefers the operation behind the bulb, as in that situation there is much less risk of the formation of sinuses than in front of that part.‡ When the stone is found within a short distance of the orifice, I have always been able to remove it by means of a silver director.

Inflammation of the Prepuce.—This disease is discovered by a discharge of purulent matter from the inner surface of the prepuce, which is swollen and tender. The cause of the complaint is exposure to cold. It sometimes also appears to proceed from a deranged state of the digestive organs.

Treatment.—One of the following lotions should be injected between the glans and prepuce, three times a-day, by means of a small syringe.

℞—Tinct. myrrh, ʒj;
Liq. calcis, ℥v.—M.

vel,
℞—Aluminis, ʒj;
Aquæ, ℥vj.—M.

When the stomach and bowels are disordered, a few doses of chloride of mercury and jalap, or salts and senna, should be prescribed.

[In lieu of the above, it will sometimes be preferable to inject, two or three times a-day, a mixture of two drachms of the liquid chloride of soda and four ounces of water. If the child be scrofulous, give at the same time from two to five drops of the tincture of iodine twice a-day for a week.]

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* Lancet, vol. xi. p. 463.

† Practical Surgery, p. 420.

‡ Med. Chir. Rev., vol. xvii. p. 190.

Discharge from the Vagina.—Formerly, every purulent or mucous discharge from the vagina was supposed to be of an infectious and specific character. The fact is, that purulent and muco-purulent secretion is speedily excited in the mucous membrane lining the passage, by accident, by the friction of clothes, by cold, or by the irritation in the rectum produced by ascarides. It may also arise from the extension of intertrigo, to which some children from cold or from neglect are particularly subject.

Treatment.—The inflamed parts should be washed with warm water two or three times daily, and the following lotion introduced between the labia, by means of lint moistened with it.

℞—Liq. plumbi diacetat. ʒj;
Aquæ distillat. ℥vj.—M.

When the discharge resists this remedy, the following lotion should be injected by means of a bone or glass syringe, three times a-day.

℞—Zinci sulphatis,
Aluminis, āā ʒss. ad ʒj.
Aquæ distillat. ℔ss.—M.

Should any case be found so obstinate as to defy this application, the following will not fail to remove the discharge:—

℞—Argenti nitratis, gr. xv. ad ʒss;
Aquæ distill. ℥iv.—M.

The following mixture may also be administered with advantage at the same time:—

℞—Magnesiæ sulphatis ʒvj;
Quin. disulphatis gr. v;
Acidi sulph. dil. ʒss;
Tinct. aurantii ʒj;
Aquæ q. s. ut fiant ℥vj;
Capiat cochleare magnum bis quotidie.

[These vaginal discharges of young children are very frequently manifestations of the scrofulous diathesis, and cannot be cured apart from the exhibition of a corrective of that state. Hence the necessity of employing a weak solution of the hydriodate of potash:—

℞—Hyd. Pot, ℈i.
Aquæ ℥iv.—M.

Of this, give a teaspoonful or half full, three times a-day to children from one to three years old. In connection with this, I prefer to touch the vagina with the solid lunar caustic, once or twice, rather than to use a solution, as advised by Coley.]

Aphtha Pudendi and sloughing Phagedæna.—Young as well as adult females are liable to these diseases. I have here associated them, because I have in many instances been able to trace the origin of the latter to the former disease, particularly in children. Aphtha pudendi is preceded by fever, commencing with chilliness and wandering pains. At the end of a few days, the child complains of heat in the vagina and pain during the passage of the urine. On examination, aphthous vesicles are discovered of various sizes, from that of a small pea to that of a horse-bean. These vesicles are surrounded by a dark, inflamed base, and some of them on bursting leave a white slough. Unless proper attention is directed to these aphthous eruptions, the acrimony of the urine increases the pain and the subsequent ulceration. In mild cases, the parts heal by attention to cleanliness and mild applications. In others, the aphthous ulcerations increase in their dimensions and coalesce, and deep ash-colored sloughs appear in large patches, which sometimes occupy the whole labium on each side, attended with constant pain. The surrounding dark red inflammation now increases in extent, and the sloughing process rapidly spreads. An offensive discharge excoriating the integuments on the inside of the thighs and between the nates now adds to the distress of the patient, and the face assumes a pale, hollow, and cadaverous appearance. In some cases, the disease begins in the form of intertrigo, which spreads from the anus to the labia pudendi, where vesications soon appear, which terminate in sloughing ulcerations. Some of the sloughs separating hang in fragments, while the destructive process extends with unabated fury. At length delirium accompanied with typhoid fever, and sometimes with inflammation in the bronchial mucous membrane, supervenes, and the patient falls into fatal collapse. Sometimes before death occurs, the aphthous inflammation attacks the mucous coat of the intestines, and aggravates the case with troublesome and exhausting diarrhœa. The ulceration of the pudendum mentioned in the seventh vol. of the 'Medico-Chir. Transactions,' by Mr. Kinder Wood, appears to be the disease I have described; and in both the cases related by that surgeon, aphthæ were present.

The cause of aphtha pudendi is the same as that of other forms of aphthous eruptions, namely, exposure to cold; and the striking difference which is observable in the progress of the disease in different individuals is dependent on the different condition of the constitution at the invasion of the disease; and this will explain the reason of its greater frequency and severity with the children of the poor, who are often ill-fed, and imperfectly clothed, and in a state of physical debility which renders them unfit to contend against any febrile or inflammatory attack.

Treatment.—In healthy and robust children, the only treatment required will be a dose of salts and senna, followed by citrate of potash once in four hours, and the following liniment, which should be applied to the inflamed parts, whether originating in aphtha or intertigro, several times a-day.

℞.—Plumbi oxidi pulv. ℥ss.
Ceræ albæ, gr. xx.
Aceti distil. ℥ss.
Olei olivæ, ʒvij.
Cetacii, gr. xlv.—M.

The more severe and dangerous form of the disease, ending in sloughing and corroding ulcerations, and appearing in cachectic children, will require a different mode of treatment, both local and constitutional. The ulceration and sloughing commence so early in those cases, often at the end of twenty-four or thirty-six hours, that it will be requisite to pay more minute and early attention to the state of the pudendal mucous membrane. As soon as the ulcers are discovered, they will be found covered with a white, closely-adhering, thick, lymph-like substance, which is the first stage of the sloughing process, and resembles the eschar produced by a burn or scald. This is, in fact, a portion of dead cutis vera, with its rete mucosum thickened by the inflammation, the epidermis, which constituted the vesicle, having burst and disappeared. In this incipient state of the destructive process, ung. hyd. nitrico-oxid., spread thickly on lint, will generally arrest the local mischief; but, should this application not soon be found to stop its progress, the practice recommended by Mr. Welbank, in one of the early volumes of the 'Medico-Chir. Transactions,' must be adopted with promptitude. This is the application of undiluted nitric acid, which should be conveyed to and pressed upon the whole surface of the slough, about half a minute, with the assistance of a glass rod and lint, previously immersed in the acid. Sometimes sharp pain is felt, and sometimes scarcely any sensation except that of relief, by the contact of the acid. When the pain is considerable, ten or fifteen drops of tincture of opium may be given; but no outward remedy will be required, except a dossil of dry lint. As soon as the acid has been applied, it is astonishing to observe the immediate and lasting disappearance of the purple-colored inflammation, which surrounds the ulcerated and sloughy parts, strangling the capillary circulation, and rapidly extending death over the adjoining surface. It seldom happens that a second application of the acid is required, for not only is the external inflammation immediately arrested, but the surface of the ulceration, after the separation of the slough has taken place, assumes a healthy condition, and the healing process commences, and completes the cicatrization of the ulcer, requiring no other assistance than the constant contact of soft lint, immersed in cold or tepid water. This simple auxiliary induces its beneficial effects on the principle of preventing a recurrence of inflammation, which is the great obstacle in all cases to the restoration of ulcerated or wounded parts. A solution of disulphate of quinine, taken three times a-day, will support the strength of the patient; and small repeated doses of opium may be required to allay the purging, when the intestinal mucous surface partakes of the aphthous inflammation. Nourishing diet will also accelerate the recovery of the patient, after the malignant inflammation has been subdued."

[In addition, I may add that no kind of local means will avail in the children of squalid poverty, or even in higher life, if there be tokens of the deteriorating influence of scrofula, or even the faintest manifestation of the scrofulous diathesis. We must invigorate the system by a good diet and by removal to a more salubrious locality, and at the same time administer half-grain doses of the iodide of iron twice or thrice a-day to children of two years old, and this must be attended to for two or three weeks. The best mode of exhibition is in a teaspoonful of ginger or lemon syrup. The improvement, under this management, is often surprisingly rapid.]

INTERMITTENTS.

It is not our purpose to enter fully into the consideration of this subject. We desire to say, however, that not only are children liable to be attacked by ague and fever, but that the disease may appear at birth, or very soon after, and must be promptly met. It has been my lot to treat an infant only a week old for a regular tertian, and the same principles that govern us in respect of older subjects are equally applicable here.

So far as my observation has extended, and it has not been limited by any means, young children are much more frequently the subjects of high delirium in the febrile stage than adults are. This symptom rises so high often as to excite serious apprehensions for the result; not in the mind of the physician, but in the friends and near relatives.

It is specially important for young practitioners to know that young children will bear the sulphate of quinine as well, perhaps better, than older patients. Such has been the result of my experience in hundreds of cases, so that I have no more hesitation in respect of the remedy in the infantile than in the adult case. Inasmuch, however, as the alimentary canal and stomach are more frequently deranged in younger subjects, the need of what is called preparatory treatment is generally more marked. Unless, therefore, an infant be manifestly feeble, and has been purged spontaneously or otherwise, it will be proper to administer two or three grains of ipecacuanha, and a grain or two of calomel, followed in two or three hours with a dose of castor oil, or magnesia and rhubarb, prior to the exhibition of the sulphate of quinine. The acidulated solution is generally preferable in such cases:—

℞.—Quin disulph. grs. x.
Aquæ, ℥i.
Acid sulph. dil. arom. gtt. v.

A child only two weeks old may take the half of a teaspoonful of this mixture ten times a-day, or oftener; and after the arrest of the disease, let the same dose be given two or three times a-day for several weeks, to guard against a recurrence. Should it appear that the child is feeble, and has been the subject of repeated purgation, the mixture may be administered with no other delay than to give a little bicarbonate of soda or calcined magnesia as an antacid.

In respect of the high delirium of young children, as it occurs in the febrile stage, the proper course to be pursued is to bleed if the case be very alarming, or to nauseate with fractional portions of tartar emetic dissolved in cold water, emptying the bowels by active injections, putting the feet in hot water and applying ice to the head, and sinapisms to the ankles. Very generally, however, the delirium will subside spontaneously, as the sweating stage comes to the rescue.

I feel it to be very important to impress the young physician with the necessity of *curing* his young patients of this periodical affection promptly. I say *curing*, not doing the thing apparently, but in fact. I am the more urgent in this matter, because of the morbific tendencies of ague and fever, frequently recurring, to accelerate tubercular development in the lungs, when there is the slightest constitutional predisposition that way. In older persons, the liver may suffer; but if a child derive a bad taint from his parents, the morbid manifestation will be in the lungs, if the ague be neglected or less than half cured.

To be positively sure that the disease will not continue to exert a pernicious influence by recurrence, it is absolutely necessary, after the arrest of the ague, to administer a small quantity of the sulphate of quinine daily for weeks, and even until the setting in of winter. A grain per day will be found to meet this end very satisfactorily; the general health will be improved, and the liability to tubercular development will be averted. Should the child evince the slightest tokens of a scrofulous habit, the iodide of quinine might be necessary, or small doses of the hydriodate of potash alternated with the salt of quinine.

It is of great moment during the treatment in convalesence to protect the body carefully against all vicissitudes of the weather, to guard against exposures to wet and cold, and to direct a nutritive yet very digestible kind of diet.

OF PNEUMONIA.

This word is from *pneumon*, the Greek for *lung*. It properly imports inflammation of the substance of the lungs, or of the air-cells, which go to make up the lungs. It not unfrequently happens that cases called inflammation of the lungs are truly bronchitis; not inflammation of the air-cells, but of the bronchial tubes. There is, beyond doubt, delicate as they may seem to be, true inflammation of the air-cells themselves. Some have called this *peripneumonia*, though this term is now but seldom employed. It means on, or around, the lungs. We shall treat of *Pneumonia* as inflammation of the air-cells. It is quite easy to perceive that if inflammation commence in the air-cells, it may progress, as in other parts, and so lay the foundation of the several stages, marked by the authors. Læennec has divided acute pneumonia into *engorgement*, which simply denotes an unusual collection of blood, a mere congestion, which may or may not be inflammatory at first, but which always becomes so; *hepatization*, or the red hepatization of Andral; and *purulent infiltration*, or the gray hepatization of the same writer. The phrase *lobar* and *lobular pneumonia*, or *vesicular pneumonia*, refers to the disease as it affects the whole or continuous parts of lobes, or the vesicles in general.

Whatever be the variety, it is very often a dangerous and fatal malady, calling for great care and sound judgment. It is a disease, too, of great fatality in early childhood, and prevails to a far greater extent than many physicians appear to think. The naked fact that it has been entirely overlooked in some works on the diseases of children is palpable evidence that mistakes have been made in this respect.

The General Symptoms.—In the commencement of this disease, the usual attendants of inflammatory affections are often visible. We find the patient with quite an active fever, perhaps from the beginning, and this ushered in by a shivering or cold stage, with subsequent heat of the surface, and a highly flushed condition of the face. There is usually a distressing headache, and the urine is of a deep red color. The pulse is generally round and full—though sometimes corded and small. In some cases, it indicates obvious debility; while the action of the heart, as discovered by the naked ear or stethoscope, points to an opposite condition. Hence the importance of careful inspection.

The local symptoms do not always elicit attention for the first day or two, and it might be supposed there was only a pretty smart attack of common fever. But the patient soon directs your attention to pain in the chest, not acute and lancinating as in pleurisy, but deep-seated, obtuse, and often diffused. When the pain is acute, as it may be even after it has been as already described, we infer that there has been superadded more or less of pleuritis. Often, in true pneumonia, the sensation is rather that of uneasiness and distension than of positive, clearly-defined pain. If a careful examination be made, we will be able to locate the pain in the anterior of the thorax, beneath the sternum or mammæ, and occasionally under the scapula. The patient may have more or less cough, and this symptom greatly aggravates the disease. This cough may be quite troublesome, often constant, or nearly so, and rarely assuming the paroxysmal form. At first it is dry, but after a season there is brought up a variable kind of matter, that of itself attracts attention. The respiration is always embarrassed, but while many complain of much difficulty in breathing, others realize very little distress. This is specially apt to be the case when the patient lies perfectly still, and is of an uncomplaining temper. The number of respirations is quite thirty in a minute, and may, in aggravated cases, range between that number and sixty. It may be that the more common position of patients in bed is a prompting of nature to lessen the embarrassments of the case. We find them on their back, with the shoulders a little depressed. Rarely do we see them in even a semi-erect posture; and it is worthy of note that some patients pass through all the stages and die without ever having complained of difficulty in the act of respiration, or having been obliged to lie in the recumbent posture.

The character of the Sputa.—As the disease advances, the cough becomes more moist, and the sputa begin to assume a pathognomonic aspect. They are of a rusty, brickdust appearance, with shades of yellow and red, mixed in variable proportions. It is very different from the discharge in bronchitis. The expectorated matter is also various in tenacity. So obviously is the consistence increased, that we may invert the vessel containing it, and the contents will not fall out. When this is the quality of the sputa, we may be sure that a very active form of pulmonic inflammation is present. Rarely do we see the expectorated matter entirely purulent, and still less frequently do we find it fetid.

Elliotson thinks less highly of the sputa as evidence of existing pneumonia than some other writers; but I think it is to be regarded as a very important manifestation.

The mental powers are not often much disturbed in pneumonia, and, therefore, the supervention of delirium very early in the attack is held to be an unfavorable indication. We do not say, however, that it necessarily portends a fatal issue.

Duration.—It is not common for a case that ends favorably to continue longer than seven or eight days. If it be protracted beyond that period, the danger is considerably augmented, although the case may end happily. Some have imagined that pneumonia paid respect to the doctrine of critical days, as laid down by some writers in fever, but this is all mere fancy.

The *morbid appearances* are very important, not only in themselves regarded, but because they lay the foundation of the best view that has ever been taken of the stages of the disease. And hence we shall look at the morbid changes first, although it be a departure from the ordinary course.

In the *first stage* of pneumonic inflammation, the lung is found to suffer only an accumulation of blood, and hence it is more solid and heavy than usual. If inspected, we notice external lividity, and if pressed with the fingers the impression remains, very much as if we pressed a dropsical limb. If we cut into such a lung, a deep blood-red color is manifest, and there is present a frothy, bloody fluid. But even now the lung is spongy, and gives a crackling sensation under the fingers. Should the patient die, as he may die, in this stage, we find nothing but an accumulation of blood and serum. Now, as this lung, thus morbid, will crackle after death, we know that it contains air, and hence there was undoubtedly the respiratory murmur to be detected by the ear or stethoscope applied over it; and, for the same reason, percussion would have yielded a hollow sound before death. These are just the facts of the case. But we also hear, besides the murmur, a crackling sound, and that in the first stage of the inflammation and from its very commencement. We do not find the ordinary, simple respiratory murmur, but it is blended with the crackling, and hence the *crepitous râle* or *rattle;* or, as Elliotson calls it, *crepitous respiration.* We have the idea of very numerous and small bubbles, almost dry, and the dry crackling sound is the more distinct as the spot inflamed lies near to the surface. So acute does the sense of hearing become in these cases, by frequent use, that some persons can tell the exact depth of the inflammation from the loudness of the crackling.

The *second stage* presents an altered state of parts. As the inflammation progresses, the lungs become more heavy; in fact, they acquire so much firmness as to look very much like liver, and hence the term *hepatization*, so generally employed. To this term some very distinguished men object, and propose to use instead the word *solidification*. Andral, Elliotson and others agree here. I do not know that it is a matter of great moment, provided we understand well the actual condition involved. Compared with the natural air-cell structure, the lung is now truly *solid*. It has no cellular structure, and consequently contains no air, hence it will not crackle if we press it. It has become wholly impervious to air. We may cut it, and squeeze it, and scrape it, but very little fluid will escape; and all that does is void of froth, nor is it so thin as that seen in the first stage.

Now, when a lung is in such a state, we might readily infer what the physical signs will be. Percussion over a lung so changed could not possibly give a *hollow* sound, but must present great *dullness*. We strike on a part as solid as liver, and hence the sound must be dull. Listen as attentively as we may, mediately or immediately, we perceive nothing like a respiratory murmur, for there is no air present. As there is no murmur, there is no respiration, and consequently there can be no crepitant rattle. In the first stage, we have crepitous rattle because there is some fluid and some air in the air-cells, but in this stage the cells are obliterated; virtually, there is no fluid nor air present; the cells are solidified, and there is no crepitous respiration. It may happen, however, that the inflamed part of the lung will be situated close to a large bronchial tube, and then, if the patient speak, we may hear his voice by the stethoscope.

The *third stage* presents a still further change of structure. Inflammation tends here, as elsewhere, to suppuration, and this marks the third stage. We find here, however, a peculiarity, the pus not collected into an abscess but diffused. We have what is called *purulent infiltration*. Just where the second stage ends and the third begins the lung is quite hard, and soon shows a yellow or straw color. The formation of pus is generally small at first, but it suffices to alter the color of the lung. Presently, however, the pus is much more copious, the lung softens and yields to the point of the finger. In this stage, as in the second, percussion fails to give a hollow sound. There is no respiratory murmur neither, as in the second stage; but we perceive quite a loud *mucous rattle,* not unlike the sound emitted when we force air into and through soap-suds. This mucous rattle is easily heard in the bronchi, because some of the pus gets into them, or there is a purulent secretion from the lining membrane of the bronchial tubes.

Some have thought the lungs were quite liable to have abscesses formed by pneumonic inflammation, but that event is very rare, as proved satisfactorily by Lænnec and others. Indeed, it is more than probable that in the cases in which abscesses have been thought to depend on actual inflammation of the lungs, they had long before pre-existed in the shape of tubercles which never till then had softened. Such is the view of Lænnec, Elliotson, and others. Of several hundred dissections of persons who died of pneumonia, Lænnec found not more than six with abscesses in the lungs, and these were small. A very good reason has been offered for this state of things, viz., that pneumonia has usually been cured by art too soon to allow the formation of abscess, or it has killed too soon to allow of such obvious destruction of the pulmonic tissue.

Should a case of pneumonia present an abscess actually formed, it will give the same auscultatory sound that we get from a cavern in phthisis. We hear the voice through the stethoscope, and when the patient breathes, there is the sound of a cavity or hollow, and also metallic tinkling, as if a bell were struck with the point of a pin. There is cavernous respiration and cavernous rattle also.

The Diagnosis.—We may distinguish pneumonia from bronchitis by the nature of the pain, which is not of that peculiar constrictive and burning character noticed in the latter; by the presence of the crepitant rattle, with dullness of sound on percussion, whereas in bronchitis there is no dullness; by the almost agonizing difficulty of respiration so often found in bronchitis, and rarely seen in pneumonia; also by the character of the sputa which are never of a rusty, red color in bronchitis, as they are in pneumonia. We distinguish pneumonia from pleurisy by the total absence of crepitant rattle in the latter, as well as its scanty expectoration. We have in pleurisy much more distress in breathing, the patient being generally seen lying on the side. We have also a peculiar sound, not known to pneumonia, called *ægophony;* and there is also more or less dilatation of the intercostal spaces, a thing not found in pneumonia. The latter is, moreover, an inflammation of the air cells, while pleurisy is inflammation of the pleura, and is marked by all the peculiar symptoms of inflammation of serous tissues. Pneumonia has been confounded with hepatitis, yet unnecessarily, as we think. The crepitant rattle is always absent in hepatitis, the patient lies on the affected side almost invariably, and there is none of the peculiar ferruginous rusty-looking expectoration that is so exceedingly characteristic of pneumonia.

Progress of the disease.—This disease has ended fatally, even when there was not a very large portion of lung affected; and certainly it does sometimes end thus, before it has fully passed the first stage. It is also true that the first and second stages are often seen in different parts of the same lung, and sometimes even the third stage also.

It is of some moment to attend to the part of the lung that is usually attacked. In a clear majority of cases, the inflammation begins in the lower part of the organ, and it sometimes remains there. This is quite the reverse of what is noticed in regard to the lung in phthisis; there the tubercular deposit appears first in the most superior portions of the lungs, rarely making its onset in the most depending parts. When pneumonia has advanced to the second or third stage, we find the evidences still in the lower portions; and sometimes, co-existent with this state of things, we may see the proofs of inflammatory invasion higher up. There is some disagreement as to whether the right or left lung is the more liable to be attacked, but all agree that the lower part of the lung is first seized with inflammation. Elliotson thinks there is no doubt that the membrane of the air-cells, and not the surrounding cellular tissue, is the seat of the inflammation; but I am of opinion that the whole structure is often involved.

In the second stage, when the lung is solidified though still red, we shall look in vain for the original air-cells. Tear the structure or cut it with a knife, and you detect minute grains or granules, of a round or oval shape, corresponding very exactly with the form the air-cells would be apt to assume if filled by art with a viscid fluid and then made quite solid.

The order of stages, as already noticed, is further corroborated by the changes that are observed in the *progress of recovery*. If we succeed in the use of remedies, and cure the patient of the inflammatory attack, it will be found that the lung passes through the same stages, yet inversely. If the third stage abate and cease, the second ensues or something like it; the second then gives way for the first, and the signs previously noticed by the naked ear or stethoscope go through the same inverted order precisely. If the patient was only in the first stage, there was a perceptible crepitant rattle, and even a crackling. But as the case yields, the patient becomes evidently better, the rattle declines, is less and less audible, at length ceases, and gives place to the clear, natural, respiratory murmur; and so of the second and third stages. All the facts prove the exact correspondence of the morbid phenomena, as shown by dissection, with the phenomena developed by auscultation and percussion. It is this harmony, confirmed by reiterated observations, that has invested the stethoscope with such vast importance. We do not pretend to say that good and accurate observers of nature may not determine the existence of pneumonia and treat it correctly, apart from auscultation; but we do say, and the facts as already given bear us out in the statement, that this aid should never be neglected by the intelligent practitioner. Those, especially, who complain of the uncertainty of medical evidence should be the last to neglect the stethoscope as a guide in doubtful cases. I know that some men have made an unwise use of the instrument, but that is no sort of argument against it. No physician should neglect to avail himself of a help that so faithfully reveals the workings of disease; at least, in every case of doubt or difficulty he should seek its guidance.

The *causes* of pneumonia are pretty much the same with those of other inflammations. Cold is a very frequent cause, and so are sudden vicissitudes of weather, from warm or temperate to cold. Exposure to sudden cold and moisture, especially in the months of spring and winter, frequently induces it, in all the northern and western portions of our country, as well as in the Middle States. One attack renders the party more liable to a repetition of the disease, because, it may be, of the greater liability of the lung, from change of structure. Hypertrophy of the heart is both a predisposing and an exciting cause, and rarely has been known to exist long without inducing pneumonia more or less grave. It is not unfrequently found to occur in the course of eruptive fevers, and also to succeed their attacks. When it occurs in the progress of phthisis, it is seldom dangerous or fatal, though it seems to exert a very decided influence in the rapid development of tubercular deposition. This disease is not confined to any period of life, since we find it in infancy, middle age, and in advanced life.

A peculiar kind of pneumonia, supposed to depend on the epidemic prevalence of a typhoid or putrescent predisposition, has often prevailed in Europe and America, called Pneumonia Typhoides, or Typhoid Pneumonia. Its progress is often very rapid, and it is apt to prove fatal.

The Prognosis.—Although pneumonia is very often cured, it can never be viewed as a trivial disease. The danger is frequently masked by the absence of great uneasiness or distress, even when in its worst form. According to the statistics of some hospitals, observed for years, one-fourth of the cases of pneumonia died. The mortality has generally been greatest between the ages of eighteen and thirty.

We are next to speak of the *treatment*. In general, we remark that this is based on the same principles that direct our treatment of inflammation everywhere. Hence, the free use of the lancet, the liberal administration of calomel and opium, calomel and ipecacuanha, and the tartar emetic practice of the French and Italians, have been resorted to, separately and in combination, by various practitioners, as suited to the subduction of active pneumonic inflammation. As adjuvants to the above remedies, it is very common to exhibit diaphoretics, expectorants, sedatives, and counter-irritants generally; and although each and all of these may be useful in their proper place, they hold a decidedly inferior rank when placed by the side of the lancet, calomel, opium, and ipecacuanha. And, in my judgment, the most controlling by far, and the use of which should always take precedence of the rest, is copious blood-letting. In truth, there is no single remedy capable of doing so much in this disease as venesection.

In the use of sanguiferous depletion, a serious and mischievous error has often been committed. This consists, not so much in the too free use of the lancet as in the detraction of blood at the wrong time. The remedy is most signally successful when boldly employed in the early period of the malady—in the early part of the first stage. It is quite certain that one, two, or three bleedings in the first twenty-four or thirty-six hours will accomplish more good in the reduction of the inflammatory action than three times as much taken away at a later period. It is, alas! a too common mistake in the employment of nearly all active remedies to employ them too late. Here we find peculiar reasons to urge the free use of the lancet very early in the attack. A vital organ of vast importance to health and to life is at stake; an inflammatory process is at work, whose natural tendency is to complete disorganization and hasten death. To check the fatal march, to save the lungs as well as life, we are to nip the evil in the bud, and to do this we must boldly employ the lancet. By its use we arrest the evil, and restore the lungs to their normal state.

If all this be true, and we verily believe it, how immensely important is it to understand the pathology of the disease! If, in ignorance of its stages, we employ in the first stage a decided stimulant in place of the lancet, we accelerate the fatal issue.

The question may be propounded, How much blood should be taken away at once? We reply, that as the arrest of the disease depends on the annihilation of the inflammatory process, the bleeding should, if practicable, be influenced wholly by that circumstance. If the patient is feeble (apparently), that will not necessarily preclude the use of the lancet. Although not able to bear the loss of much blood, we may gain our point by the abstraction of a smaller quantity, putting the patient in the erect posture. Thus, we can make, with the smallest amount of abstraction, a marked impression on the system, and that is what we need. But if the patient be very plethoric, full-blooded, and a free liver, we may safely take from twenty to forty ounces at once in the case of an adult, and from five to ten, if the patient be from five to twelve years old; and, to guard against fainting, we may bleed in the horizontal position. Should the obvious symptoms, the difficulty of breathing and the crepitant rattle be unabated, bleed again, and let the blood flow freely until the pulse, the breathing, the rattle, all are relieved. Now, to bleed a patient laboring under acute and severe pneumonia, it will not answer to make a pin-hole orifice in the vein—it must be a full, open orifice, permitting a bold stream to flow. Timidity here is, in many cases, death or disorganization, or both. Læennec and Gregory, and other able practitioners, were in favor of a free bleeding, very early, in preference to several small bleedings at intervals of four or five hours. A distinguished writer has said that the danger of a large bleeding is far less than the danger of the disease, and I presume there are hundreds of practitioners who have verified the truth of this remark.

Almost invariably we find the blood to have the buffy coat, and that is made an argument for more depletion; yet, if we do not see this coat, and the symptoms are urgent, we should bleed, notwithstanding.

A remark may be proper touching the age of the patient in connection with this remedy. It may be thought that young children and old people do not require free venesection. This is a mistake, and many persons in the extremes of life perish for fear of this remedy. Local bleeding, by leeches, is generally resorted to in those cases, and it will doubtless assist the lancet, but can rarely be a substitute. The use of cups will supply the place of leeches when these cannot be had.

It is desirable to procure a due evacuation of the bowels, avoiding, however, anything like hypercatharsis. This would interfere with the natural crisis or breaking up of the disease, by free expectoration or other critical discharge. One smart purge of calomel and rhubarb will be proper, immediately after blood-letting. It removes offending causes from the bowels and moderately depletes. The milder laxatives should be preferred afterwards, if anything of the kind be called for.

When, from any circumstances, bleeding cannot be carried as far as we might desire, or when the remedy has been too long deferred, it will be proper to give calomel and ipecacuanha or calomel and opium. I have obtained most happy results from the exhibition of two grains of calomel and three of ipecacuanha every three hours, adding a small quantity of opium, if needful, and especially Dover's powder at bedtime, to the extent of ten or twelve grains, in syrup or pill. The calomel and ipecacuanha seem to exert a controlling influence on the inflammatory action very directly, and if in a few days we find some ptyalism, it need not alarm—indeed, it may be highly beneficial. Should the calomel and ipecacuanha purge, it will be necessary to add some opiate to each powder, at least once in every four or six hours. This use of calomel, opium, and ipecacuanha I have found also to act as a diaphoretic, while it allays pain and subdues inflammatory action.

The contra-stimulant use of tartar emetic, many years ago in fashion and since revived as a new remedy, has had many advocates in Europe, especially among the French and Italians. Lænnec was very partial to this practice, which, beginning with venesection to sixteen or twenty ounces, was made up of tartar emetic given in doses of three to five grains every two, three or four hours. Sometimes the dose was smaller, but frequently it was much larger. The rule was, in the practice of some at least, to continue the tartar emetic until the prominent symptoms yielded. The first dose or two vomited, after which, *tolerance* having been established, the medicine was supposed to spend its whole force on the inflamed tissue, reducing the morbid action there. A leading advocate of the practice, perhaps Piorry, thought he could define the extent of the inflammation by the quantity of tartar emetic the patient could take without being severely vomited. The bowels in some cases were very much disturbed, but this was regarded by many as undesirable. Lænnec expressly taught that the success of the medicine did not call for copious evacuations of any kind. Even after amendment began to be obvious, the tartar emetic was continued in smaller doses, or given less frequently, to prevent a relapse.

This plan of treatment has had opposers quite as learned and experienced, even in Europe, as are any of its advocates. And I am far from being convinced that, even in the hands of Lænnec, it has been more successful than the practice by venesection already spoken of. In this country, we are able to subdue pneumonia without resorting to it, and hence it is not necessary to our code of practice.

Regarding expectoration as the natural crisis of this disease, practitioners have resorted to the use of such remedies as are held to possess expectorant properties. With the exception of ipecacuhana, they are of little value, and that may be given in form of infusion merely to nauseate gently. But the best expectorant by far is the lancet. If used timely and freely, it always promotes expectoration by subduing inflammatory action.

Some practitioners have tried free and full vomiting, as we are told, with great success. We do not mean a single full dose but a daily repetition, and even four or five times in a day, for a week or longer.

Nearly all kinds of counter-irritants have had more or less repute. They are proper only in the latter periods, when the more active inflammatory symptoms have been subdued.

It will occur, from what has been said, that the diet for patients laboring under pneumonia should be of the most unirritating quality, and in no degree stimulating. Toast and water, water gruel, gum Arabic water, slippery elm emulsion, rice water, will be suitable. It is also of importance to keep the patient as quiet as may be. To this end, every source of mental irritation should be rigidly excluded.

The disease having been completely subdued, the patient should be protected, in all practicable ways, from the action of cold. A shirt of flannel or buckskin should be worn next the skin. The feet should be constantly protected from dampness and cold. The diet, although light, may be gradually increased in its nutritive qualities. But the use of strong, rich food, and, above all, of stimulating drinks, should be absolutely prohibited.

As more or less solidification sometimes remains in a lung, the need of caution touching all needless exposures will occur to the reader. It may be well, also, to administer, occasionally, alterative doses of the blue mass, and to observe a strict regard to abstemiousness.

In respect of typhoid pneumonia, we have to remark that the typhoid element forbids depletion, such as pneumonia, *per se*, would warrant. We may generally, however, deplete from the chest by cups or leeches, followed by blisters and counter-irritants. Calomel, opium, and ipecacuanha will also be very proper, and if expectorants are needed, as they often are, the volatile julep will often prove the best we can employ. Weak wine-whey may sometimes be beneficial.

PHTHISIS PULMONALIS.

To such an extent has the idea found currency that pulmonary consumption belongs only to adult life, that some writers on the diseases of children have not so much as named it. And yet it is very certain that we find marks too plain to be mistaken before the twelfth year of life, that the disease in question has already made its victim so certain, that the best devised appliances of science and art will prove unavailing in the case. A tubercular or scrofulous taint, derived from parents, has often given proofs of its presence, even at an earlier date, and shown infallible indications of a speedily fatal issue.

The increasing prevalence and great mortality of this disease make it a subject of vast importance to the medical man. And while it is true that thousands die from the assaults of other forms of disease, it is equally certain that the peculiar circumstances attending the march of this malady are eminently fitted to excite the deepest interest and the most untiring research. The most promising of both sexes, in respect of character and intellectual powers, are cut down by its influence, just at the moment when the hopes and expectations of friends are most buoyant and flattering.

The word *phthisis* is of Greek origin, and implies *corruption* or *wasting*, and has been applied to various kinds of disease, characterized by the leading marks of debility and decay of bodily power, attended by hectic fever. A popular writer has given the following epitome of this disease :—

"Cough at first, seeming almost as if it were *feigned*, expectoration with little relief, difficult respiration, hæmoptysis, emaciation, hectic fever, mind cheerful, confident of recovery, chest dull on percussion, chiefly in the upper portion, pectoriloquism in the advanced stage."

The dependence of consumption on inflammation as its source is a point long agitated, and yet perhaps unsettled. The late Dr. Rush taught that neglected or badly treated inflammations of the lungs terminated in phthisis. Others in more recent times call this position in question, and some deny it altogether. I have no doubt that in some cases the disease is fairly attributable to this cause.

Several varieties of phthisis have been enumerated by writers, most of which refer solely to some derangement in the functions of the thoracic viscera. The term is now, however, very generally restricted to that form of disease which depends on, and is essentially connected with the production of a particular kind of matter, called *tubercle*, and about which there has been so much controversy. This view was peculiar to Lænnec, and is adopted very generally.

No less than six species of this disease have been described by some writers; but at present it is held to depend on a peculiar habit of body, denominated *tuberculous cachexia*, and that however various it may seem to be in different individuals, the grand cause in all is the same.

I am aware that some deny the fact that a tuberculous diathesis is essential to phthisis, and more deny that tuberculous phthisis is essentially *scrofulous*. I well remember, when a student, to have witnessed many post-mortem examinations in the Philadelphia Almshouse, made to decide the question whether pulmonary consumption was not generally associated with a scrofulous diathesis. My preceptor, the late Dr. Parrish, held this opinion; and I recollect that in patients who died with marks of external scrofula, as the common tumors about the neck, &c., and who had the usual symptoms of consumption, invariably presented tubercles in the mesentery and in the lungs, frequently softened in the centre, and containing a semi-purulent matter, like that in the external tumors.

From many accurate statistical reports that have been recorded, we infer that a fourth, or very nearly of all the deaths in large cities are by this malady. And it has been questioned by some whether an individual ever did or can recover who has labored under true tubercular consumption. It is proper here, however, to notice the fact, pretty well authenticated, as I suppose, that dissections have detected what looked to be cicatrizations consequent upon the healing of abscesses, indicating the pre-existence of true phthisis. Never having witnessed these cases myself, I am unable to add confirmation.

Divisions proposed.—It has been proposed to divide this disease into two forms, according as it is *acute* or *chronic*, and also as it is *manifest* or *latent*. This division would seem to be a very natural one, corresponding well with the facts as they are every day developed.

The *acute* form is the same with that which has been called, from its exceeding rapidity, *galloping consumption*. This may extend to several months, but it has occupied as short a space as one month, with its entire individual history.

The *chronic* form is known to continue for one, two, or three years, and even for very many more.

We understand by the *manifest* or developed form that in which the symptoms are so clearly marked as to leave not a loophole for doubt. The *latent* or *occult* variety is marked by complications which, for the time being, seem to suspend or keep in check the lung disease, so that it is not perceived until weeks and months have elapsed. Læennec speaks of *irregular manifest phthisis* in which the malady seems to begin in some other part remote from the lung, and this I suppose to be really the same with the latent or occult form.

Modern authors arrange the pneumonia of phthisis under three stages, based on its tubercular character. The first is that in which the tubercles begin to be developed, at which period there is slight catarrh, scanty expectoration, and a dull sound on percussion. The second shows the pulmonic tissue a good deal condensed from the growth of tubercles in various stages of softening. The patient now discharges a frothy mucus, mixed with small opaque, yellow spots, and now and then a little blood is thrown up. In the third stage, the tubercular deposition is completely softened, or it may be in parts, less soft, and cavities actually formed. Here is detected the peculiar sound called *pectoriloquism*, and at this juncture we find colliquative diarrhœa and the usual concomitants.

It will occur to the reader how impracticable it must be to place the symptoms of phthisis in a definite series, in connection with the stages just named. There are not a few cases in which the first stage is not seen by the physician, owing to the dread of learning the truth, which would probably be imparted to the patient. And, further, the indications of the formation of tubercles are not always quite clear, and to this may be added the fact that death sometimes ensues before suppuration or softening has taken place. Besides all this, there must needs be a vast range in the symptoms of a disease the range of which stretches from a month to forty years.

We may remark, further, that the commencement of phthisis is sometimes, indeed often, quite obscure and insidious. Hence the disease has made considerable progress before an application has been made to the physician.

The earliest symptom of which the patient, or his friends, or the physician takes cognizance, in most cases, is only a *slight, short cough*. Indeed, it often seems to give offence if you appear to notice the cough, so gentle, so suppressed, that to some it might seem to be mere affectation. If you speak of it, the patient will often treat it with the greatest levity, adding the remark, perhaps, that it is *only* a very *slight cold*. This slight cold excites less attention than it might otherwise elicit, from the fact that there is no expectoration, and it is almost always a *dry* cough; yet, even now, did the patient confess it, as sometimes he will, a deep inspiration excites uneasiness, and even gentle exercise hurries the respiration. The bodily vigor is more or less impaired, and towards night there is commonly some fever followed by perspiration during the night, though this may not be very considerable in the first stage. Delicate girls, from twelve to fifteen, who have never menstruated, but who are looking for that token of womanhood with anxiety, are very apt to practice the closest concealment, until the disease finds a lodgment so secure that no earthly power can displace it.

Just at this juncture, if we percuss the chest, we shall find some dullness in the superior part, and this will be more or less manifest in proportion to the tubercular deposition there. The formation and development of tubercles always begins in this stage, and yet the symptoms are sometimes so very mild, amounting only, as the patient says, to a mere cold, that neither percussion nor auscultation is now suggested, and therefore the real nature of the case is not understood. And this state of things may go on for months, if the patient be exceedingly careful in the avoidance of the causes that are calculated to aggravate the disease. If, on the other hand, either by imprudence or bad treatment, the symptoms show a gradual intensity, we shall soon find evidence altogether unmistakable of the presence of the *second stage* or *period.* Now the cough is much more constant and harassing, no longer dry and faint, but potent enough to bring up expectorated matter, of a yellowish-green color. The discharge is somewhat consistent at times, and blended with small white or yellow spots, and tinged with blood. The patient may have felt pain in the chest months before, but now they are spoken of, and referred specially to the regions of the clavicle and scapula. Examine the pulse, in time of greatest composure, and it will be found quick, with accelerated respiration, and tokens of hectic fever are apparent. Presently the body becomes greatly emaciated, the skin often assumes a pure white, the fingers are shrunk or contracted, excepting at the joints, which are rather prominent, and the shrinking at the ends of the fingers causes the nails to conform their shape, so that we find them much more curved or bent at the edges than in health, a change that is more striking when the nails are permitted to grow quite long. The nose assumes a peculiar sharp aspect, the cheeks are flushed, the eyes more or less sunk yet unusually clear and sparkling. There is often a smile on the countenance that seems unnatural and not in keeping with the progress and general emaciation.

If the stethoscope be now applied to the upper part of the chest, we will scarcely be able, it may be, to detect the respiratory murmur, which may be very feeble, or lost. If we request the patient to speak, we will observe a peculiar kind of thrilling in the voice. Percussion yields a decidedly dull sound.

The *third stage* has some additional features. We find severe diarrhœa, profuse and wasting night-sweats, and the strength rapidly failing. There is, in many cases, a good deal of pain in the larynx, and a feeling as if some foreign body had lodged there; this is most apt to occur a few days prior to death. There is also some pain in the act of swallowing, the fauces exhibit an aphthous appearance, and the voice is very hoarse. Just at this juncture, the patient is deluded, it may be, by a suspension of the night-sweats or the diarrhœa, as these frequently alternate; but the diarrhœa, if that be alone, is much worse than before, as is also the sweating, if that take place apart from the diarrhœa, so that nothing is gained by this apparent cessation of a distressing symptom. The general debility has now so invaded the absorbents that they refuse to do their appropriate work, and the limbs become œdematous. Towards the close of the malady, we often find the discharge of purulent matter to cease. This may depend on the fact that it is no longer formed, or that the patient is too feeble to expectorate; in the latter case, he may die in a state of asphyxia. The mental functions usually abate nothing of their energy; on the other hand, they sometimes appear to acquire force. Yet it does sometimes happen that something like a gentle delirium comes on a few hours before death.

We spoke awhile ago of *pectoriloquy*. This sound depends on the presence of a cavern or cavity in the substance of the lung, which opens into the bronchi, so that when the patient speaks, the voice seems to be sent directly along the tube to the ear. The patient appears to speak from the chest, or the cavern in the lung. At the same time, no impression is made on the ear that is not applied to the stethoscope. The nearer the cavity is to the surface and the stronger the voice of the patient, the more distinct will be the *pectoriloquy*. We hear a sound a good deal like this, if we put the instrument over the larynx or trachea, the patient speaking at the same time.

Any one can readily be satisfied of this peculiar sound by placing the stethoscope in the axilla, the subclavian region, the region between the clavicle and trapezius and the infra and supra spinous fossæ. It is always more or less distinct, when there is least fluid in the cavity, and most clear when the cavity is of a moderate size. Indeed, if the cavities be very small, the sound is far from being satisfactory. If very large, we have a deep, hollow sound.

In addition to *pectoriloquy*, we notice other signs as important. They are, the *cavernous respiration*, the *cavernous cough*, and the *cavernous rattle*. These phenomena will suffice to assure us of the existence of a tubercular cavity, even if pectoriloquy had not been detected.

The *cavernous respiration* gives a sound as though air was entering a large cavity by small apertures, and the sounds noticed in natural respiration are absent.

The *cough* imparts a sensation like to the sudden dash of air into a cavity. When fully developed, it often occasions a disagreeable feeling to the ear of the examiner.

The *râle*, or *rattle*, is caused by the motion or movement in the fluid or semi-fluid contents of the cavity, by the effort of speaking or coughing. We may hear this rattle also during the natural respiration, if there be a cavity containing matter in the fluid or semi-fluid state. And if copious expectoration come on suddenly, and continue for a day or two, so as to empty the cavity, the râle will fail to be heard.

When the cavity is very large, perforation of the lung may ensue, and a new train of symptoms will be developed that demand attention. There will, of necessity, be effusion of air and purulent matter into the cavity of the chest. The perforation is said to take place more often opposite the angle of the third and fourth ribs of the left side than anywhere else.

This event almost uniformly occurs late in the disease. It is marked, says Louis, by a sudden augmentation of pain and greatly oppressed respiration, and the patient has a feeling as if air had passed from below upwards in the affected side. There is a manifest desire to lie on the side where the accident has occurred; the cough and expectoration still continue, however; the heart is somewhat displaced, and the diaphragm pushed down.

Besides these general symptoms, we have important physical signs. There is, of course, no respiratory murmur, the lung not being in contact with the thorax, by reason of interposed air or fluid. The sound will be dull.

But further; on examining the patient with the body erect and the fluid gravitating to the diaphragm, percussion gives a clear, or tympanitic sound at the upper part of the chest, showing only air to be present; and we can measure how far this state of things extends by gradually moving the fingers down to the inferior part of the chest, where the sound becomes dull, no air being there, but fluid only.

Besides, we have the *tintement metallique*, or *metallic tinkling*, of Læennec, which may be detected by the ear alone, or in connection with the stethoscope. It is like the noise caused by striking a vessel of metal or porcelain with a pin, and arises from the vibrations of the air, caused by respiration, speaking, or coughing, over a fluid contained in a cavity. This metallic tinkling is liable to be modified by an alteration of the proportions which the effused air and fluid bear to each other. When the quantity of air is much greater than that of the fluid, the sound is so changed as to be not unlike that made by blowing with a good deal of force into a large decanter or empty bottle. It is called the *amphoric* sound, or resonance, from *amphora*, a vessel, or bottle.

We have already adverted to the variable duration of *phthisis*. Louis says he has known it to kill in twenty-four days. The average period is said to be two years. It must not be taken for granted that the disease goes through all the stages noticed prior to fatal termination, by no means. The patient may die before the tubercles have increased so as greatly to impede respiration. Facts warrant this declaration, as well as another, viz., that life has been prolonged for months after the complete disorganization of one lung.

The tubercular depositions, of which we have spoken briefly, first show themselves as small semi-transparent grains or granules, about the size of hemp or millet-seed. If we press a piece of lung between the fingers, these small, hard grains offer resistance. They are the beginning of tubercle in the lungs. The color varies, being of a light gray, or inclined to yellow. Their consistence is also various. When first felt, they are distinct and quite detached from each other, and thus they remain, in some persons, throughout the course of the disease, only augmenting gradually in bulk. In this form, they are styled *miliary* tubercles.

More frequently, however, they do not continue separate, but run into each other, several coalescing so as to form masses of various size, always presenting a dirty yellow color, and having pretty much the consistence of soft cheese. This tubercular coalescence is preceded by an opake yellow spot in the centre, which gradually involves the entire mass, and to this condition has been assigned the name of *crude* tubercle. The development of tubercles is almost always first noticed in the superior portions of the upper lobes, and those that are sometimes seen in the lower lobes are never so mature as those in the upper part of the organ. The reason for this liability of the upper portions of the lungs to be tuberculated may be found in the fact that those parts, from their position, are less liable to free expansion, and so more obnoxious to the agency of congestion. It is in the same locality, too, that we find the largest cavities, and Louis has observed that these are generally nearer the posterior than the anterior surface. It is proper to add that several of the ablest writers, among them Louis, record instances (few, to be sure) of development of tubercles *only* in the lower portions of the lungs, the upper being perfectly sound and natural.

The best authorities differ as to which lung is most often tuberculated—Lænnec and Louis taking opposite sides of the question. It is a point of no practical importance, so far as we can judge.

In examining the lungs of a person who died of phthisis, we notice, in addition to numerous tubercles, that the pulmonic tissue around the tubercles is usually condensed, red, impervious to air, and perhaps ulcerated. We find several cavities in the upper lobes more or less filled with tuberculous matter, and generally communicating with the bronchi, which are also found red and a little inflamed. The cavity is traversed in various directions by bands, apparently made up of condensed tissue of the lung, covered with tuberculous matter. In these cavities, no one has ever been able to find any of the ramifications of the bronchi, and very rarely are blood-vessels to be seen in these bands.

Tubercles are by no means confined to the lungs, but have been found in nearly every part of the body. It is affirmed by Louis that we may always justly infer their presence in the lungs when we see them in any other tissue. He never found but one exception to this law in all his dissections. This accords very well with the fact stated not long since, in connection with Dr. Parrish and the Philadelphia Almshouse, and the dissections then spoken of were made in 1810 and 1811.

It has been observed that the thorax, after death from phthisis, has been found smaller than natural, and Lænnec has attempted to account for this reduction in size by the effects of repeated attacks of pleurisy. It is merely a fact in the history of the disease, but it has no practical bearings.

A few words on the *theory of tubercular development*. It continues to be quite doubtful how these tubercles are formed. There are two parties to the controversy, which has been kept up for many years, and is likely to continue. The strife is reducible to this point simply: inflammation or no inflammation. The strongest argument by Lænnec and others is, the alleged fact that tubercle does not follow pneumonia, although the latter is a very frequent disease. But to make pneumonia the basis of an argument, it should be observed that patients who die of pneumonia, after active treatment, may fail to exhibit tubercles, because the force of the remedies has been so directed as to prevent this result. The late Prof. Rush used to say that tubercles resulted from neglected or badly treated inflammations in the chest, and there would seem to be some force in the statement. We have no doubt that a neglected and protracted pneumonia may induce tubercular development, just as any slow or low fever may, chiefly by its generally enfeebling and vitiating agency.

Alison, Cruvelhier, and some others, contend that the development of tubercles is as necessarily preceded by inflammation as any effect by its cause. Dr. Alison supposes that inflammation, acute or chronic, tends directly to tubercular development. He also affirms that in the smallest tubercles he found in young children, there were distinct marks of increased vascularity around them.

I am inclined, however, to persist in my opinion expressed frequently before, that the inflammation is so modified as to be with propriety called tubercular inflammation. The question is not an unimportant one in the practical consideration of phthisis pulmonalis. It is not a mere theoretical point, as we may show hereafter, more particularly.

The *prognosis* of phthisis, as we have already said, is unfavorable, the disease being generally fatal.

The *exciting causes* are the varied sources of irritation to which the respiratory apparatus is liable, from changes of weather, and other circumstances. It is by reason of the frequent and sudden alternations of hot and cold weather that the disease is so prevalent in Great Britain and this country, while in much colder or more warmer latitudes, where the temperature varies but little, the natives enjoy a comparative exemption from its attacks.

External irritants, as found in various manufactories, often excite the disease, as the fine dusty particles thrown off in the process of pointing needles, in working millstones, in preparing knives and scythes, &c. &c. It is known that the workmen in such establishments die of phthisis ere they reach the age of forty.

What is called *black phthisis* in Great Britain is found in the laborers in coal mines, and, as we have coal mines in abundance, it is well to know that this disease is set up by the irritation of the *coal* particles constantly inhaled. The matter expectorated is nearly black. (See *Braithwaite*, No. 13, p. 81.) It will be found that children as well as adults will suffer in our coal regions from this agency.

In addition to these causes, some of the eruptive fevers, especially measles, small-pox, and scarlatina are thought to excite in a marked degree the formation of tubercles, particularly in persons who are predisposed to the disease. This remark is strikingly applicable to persons who present signs of the scrofulous diathesis, which is roused into action by any strong febrile excitement, especially if it be long continued. The older writers ascribed the origin of tubercles to repeated attacks of catarrh or bronchitis, and their opinion is backed by the views of those in the present day, who regard inflammation as a necessary precursor of tubercle.

It has been a current notion, that phthisis is communicated by contagion; in other words, that sound persons may catch the disease by living in the same house, and especially by sleeping in the same bed with the consumptive. There was a time when the walls of houses in which persons had died of phthisis were torn down, and every article of furniture burnt. And so, in this country, there was a time when men and women were hung for being witches. There is about as much truth in witchcraft as in the contagion of phthisis—certainly not less. When called upon to answer the question, whether it is safe to put a healthy child to sleep with an adult far gone in consumption, we may reply very safely and properly that it would be very undesirable to subject any person, young or old, to the annoyance of such a bed companion; but as to contagion in the case, the idea is too ridiculous to be seriously considered. Lænnec and others alike celebrated in the profession hold the same views.

The Diagnosis.—The close resemblance between early phthisis and common catarrh has been noticed in the fact that patients often mistake the one for the other. It is very important, therefore, to make a correct diagnosis. In the catarrh, the cough is free, loose, with expectoration of a peculiar glairy fluid, like the white of eggs; and relief always follows the discharge. In the early stages of phthisis, there is little or no fluid expectoration, and it affords no relief, and percussion gives a dull sound in the infra-clavicular region, the axillary region, and in the region of the supra and infra-spinous fossæ.

The catarrhal symptoms, however, are pretty certain precursors of consumption, and should be so regarded, if one or both parents and one or more of the brothers or sisters have already died of phthisis.

Error in diagnosis can hardly be made, in the advanced stage of the disease. The whole train of symptoms, emaciation, expectoration, night sweats, diarrhœa, pectoriloquy, all go to fix the nature of the case beyond mistake. The pectoriloquy has been found, however, where there was no cavity in the lung, but resulted from an enlarged or dilated bronchial tube. It has been found in chronic bronchitis, but in that we have no well-defined marks of hectic fever. The sputa are thrown off freely in the morning, and the bronchial enlargement is found in the lateral regions and at the root of the lungs, whereas the cavities formed by tubercular softening are under the sub-clavicular regions.

We come now to speak of the *treatment of phthisis.* It is exceedingly problematical whether the acknowledged advances of medical science have lessened the mortality of this disease to any considerable extent. The constant failure of all kinds of treatment in the hands of regular practitioners caused a wide field to be opened for every species of empiricism that folly and knavery could devise. Hence the syrups, and cordials, and balsams, and compound messes of trash, without number, that are pressed on the easy dupes of fraud and falsehood, under the title of *expectorants* and *pulmonics*, and which, in fact, are only so many tricks of swindling ingenuity. Nor is this a matter of surprise; for, as formerly, so now, the medical profession has been divided touching the true cause of the disease, and by consequence they have been as wide apart touching its curative indications. On the one hand, a peculiar, unknown diathesis, an exhausted and debilitated state of body led to the rejection of all depleting means, and to the use of tonics and restoratives. On the other hand, the firm persuasion that inflammatory action was the cause of the mischief, prepared the way for the use of the lancet, low diet, and all kindred appliances.

This diversity of opinion soon led to the use of specifics, each of which had able advocates, who could adduce, as they supposed, unquestionable proofs of their efficacy. Beddoes lauded digitalis to the skies, regarding it as certainly efficacious as cinchona in ague and fever. Sydenham held exercise on horseback to be a specific, and there can be no question that in the early stage it exerts a very salutary influence. The various forms of iodine have also been held to be *specific*, but they have never done more than to palliate. Mercury, too, has had its day; and, if we were to rely on the reported cases, we might be disposed to regard it as omnipotent in the management of phthisis. But it has hurried thousands to the grave, beyond a doubt. Chlorine has also been offered as a kind of specific, but I am disposed to regard it as capable of no more than mere palliation. It promotes expectoration, corrects the fetid breath, and is gently stimulant.

I am strongly inclined to the opinion that medicine, excepting to palliate or mitigate symptoms, has done vastly more harm than good in phthisis, and that the entire management resolves itself into checking symptoms of inflammation when present, and relieving contingent symptoms as they appear in the advanced stage, by suitable means. In the early stage of the disease, I am quite confident that gentle exercise, riding in a carriage or on horseback, guarding against vicissitudes of the weather, the regular use of good and generous diet, have not only prolonged life but prevented an exaggeration of the malady, apart from the use of medicine of any kind. The practice of dosing perpetually and deranging the stomach has done a thousand times more harm than good.

We shall notice, however, some of the more common remedies in use.

In the first stage of the disease, where there is acute pain in the side, with difficulty of breathing and a hard pulse, the occasional employment of the lancet will often afford manifest relief.

It is well known that consumptive persons are specially subject to pleuritic attacks, and that the pains in the chest, so often complained of, proceed from this cause. This state of things will undoubtedly justify the use of the lancet. Even Lænnec, who opposed the doctrine of the inflammatory origin of tubercles, did not hesitate to bleed when these pleuritic attacks supervened, as they often do. And all who hold to the inflammatory doctrine will of course sustain the practice. Whatever the true tubercular theory be as to its origin, there can be no doubt that the prudent use of the lancet, in the first stage of phthisis, has done great service. Indeed, we do not lack well authenticated cases to show the successful use of this remedy, in its most vigorous application. Dr. Rush has a case of the disease cured by eighty-five bleedings, and many others are reported in which repeated venesection was successful.

If the apparent general debility seem to forbid the use of the lancet, in the cases before us (pain in the side from pleuritic attacks), the employment of leeches to the thorax will be an appropriate substitute; from five to twenty may be laid on the most painful spot twice a-week, if necessary, according to the severity of the symptoms. Should hæmoptysis occur, and it is very apt to do so, and should the pulse be rather firm and tense, there will be good reason for taking from six to ten ounces of blood from the arm occasionally, and to keep down excitement by the use of nitrate of potash and tartar emetic:—

℞.—Nit. pot. ʒi;
Ant. tart. gr. i.

Mix, to make twelve powders. Take one every three hours, in sweetened water.

I knew a very distinguished Presbyterian clergyman in Philadelphia, who for many years labored under phthisis, who experienced an attack of hemorrhage monthly if he failed to employ the lancet. He used the instrument with his own hand, and with success.

It has been the practice of many physicians in connection with the use of the lancet under the circumstances named, to administer various diaphoretics and some of the saline cathartics, and to direct a low or very light diet, as sago, arrowroot, tapioca, &c. As to the diaphoretics, especially if taken at bedtime, there can be no serious objection. If the patient does not rest well, he will be benefited by a kind of Dover's powder, substituting lactucarium, or extract of belladonna, for opium. But it will seldom occur that even laxatives will be called for, unless of the mildest kind. An occasional enema will answer better generally.

It will sometimes happen, after the use of the lancet, or leeches, or cupping, to abate the pains of the chest, dependent on pleurisy, that there will be more or less pain remaining, and this state of things calls for blisters, or other counter-irritants. Some have preferred small blisters of fly ointment, or cantharadin, applied in several small spots successively. Some have preferred a large blister to one side, or to the whole chest. I have seen more benefit, with less discomfort, from the application of the blisters high up on the inside of the arm of one or both sides. These can be kept running by the use of savine cerate, or diluted fly ointment, or what is sometimes better, by one or more renewals of the blister. Some prefer to excite pustulation and ulceration by tartar emetic ointment, or a Burgundy pitch plaster, containing tartar emetic on its whole surface. One part of tartar emetic to six or eight of lard will make a suitable ointment; or, if the pitch plaster be preferred, let it be heated to softness, almost to fluidity, and then dust the emetic tartar on it, and press it in with a spatula. This ointment or plaster is sometimes very painful, by reason of a distressing tension, which can be relieved by laying on a soft poultice at the end of four hours, or even by the use of a cerate cloth. A still more efficient practice is, to rub into the skin night and morning, until the end is gained, a portion of the following mixture, being careful to avoid contact with the eyes:—

R.—Ol. crot. tig. ʒss;
Ant. tart. ℈i.
Ol. olivar ℥ss.
Mix.

The pustulations so made will set up a drain that will serve as a counter-irritant and evacuant for a long time. In lieu of all these, some prefer frictions of croton oil alone to the parts; a few drops rubbed in smartly will set up high irritation and pustulation, which may be made perpetual by renewing the application. Another mode of vesicating the chest has been by nitrate of silver, drawn very often in all directions over the skin, moistened a little for this end.

Very often the cough and pains in the chest will be removed or much abated by means of the lancet, cups, or leeches. If these fail, relief will be gained by the use of the counter-irritants just named, and there is no danger from their application. It is vastly safer to employ them than to teaze the stomach with medicine to gain the same end. And besides this, having a denuded surface, ready for the introduction of remedies into the system, we may happily avail ourselves of this inlet. Instead of giving opiates by the mouth to procure sleep, by allaying cough, we can accomplish the same by applying a half-grain or a grain of salt of morphia to the raw surface. At the same time, demulcent drinks can be taken freely, and, if desirable, they may be gently acidulated. And if it be thought necessary to give anodyne by the mouth in these cases, we may select lactucarium, in the form of pill or syrup, or the extract of henbane, both of which will give sleep, and avoid constipation or gastric disturbance. From three to five grains of either will be an adult dose, and hence from one to three will suffice for children.

To relieve the cough, a thousand prescriptions have been made, and almost innumerable devices resorted to. For a time, the hydrocyanic acid was a popular remedy, or palliative rather, but it is pretty generally and very properly laid aside. Its uncertain strength, if there were no other objection, is enough to condemn its use. But I am positively certain that its exhibition has done a thousand times more harm than good, and the sooner its use is abolished as an internal medicine the better.

From the time of Bishop Berkeley to the present, tar water and the vapors of tar have been held by some to be a kind of panacea for cough, if not for actual phthisis. But it is not entitled to serious notice. The vapors of chlorine, of iodine, &c., have also been employed, and I have no doubt that in the absence of all inflammatory symptoms, merely to promote expectoration and allay the tickling cough which is so often harassing, the inhalation of diluted chlorine might be useful. I derived most manifest and prompt, although unexpected benefit from the diluted chlorine gas, many years ago, when engaged in teaching chemistry. A dry and painful cough was speedily relieved by a plentiful expectoration.

Two of the most enfeebling and harassing symptoms in the advanced stages of phthisis are diarrhœa and night-sweats. It was long ago observed that success in checking the one was very sure to augment the other, and we often see this remark verified. An old practice, as detailed in some of the journals, was the exhibition of strong vinegar, as much and as often as it could be taken with safety to the stomach. It is reported by those who employed this simple remedy that as soon as it checked the diarrhœa it also moderated, very decidedly, the night-sweats. And I think it quite probable that this happy use of vinegar led to the employment of sugar of lead, which is acetic acid and oxide of lead. This salt has been given in doses of from two to five grains every four hours, alone, or joined to half a grain of opium in pill. The nitrate of silver and the sulphate of copper have been employed in like manner to check the diarrhœa. Dr. Bright gave two grains of ipecacuanha three times a-day to check the diarrhœa when not combined with night-sweats. In some cases, it will be found that a blister to the abdomen will check the night-sweats and diarrhœa promptly. But this and all the other means can only alleviate; and yet even that is important. It was among the finest passages in the lectures of the late Professor Rush that no duty of the physician was more imperious, none more delightful, than that of endeavoring to soften the downward and rugged pathway to the tomb. The repeated use of diluted sulphuric acid, in form of the elixir of vitriol, will often succeed in abating the night-sweats. From five to ten drops in chamomile or quassia infusion may be taken twice or thrice a-day with benefit. The tone of the stomach is thereby invigorated and hæmoptysis sometimes prevented.

It will be expected that our views should be given here touching the utility of iodine and cod-liver oil, and we are free to say that the copious testimony of Professor Williams, and others in Great Britain, as deduced from large hospital practice, warrants the belief that the oil, long persisted in, can do more for tubercular phthisis than all other appliances combined. We understand something of the propensity to smile and sneer when cod-liver oil is named, but we have seen too many marked tokens of its good effects to be alarmed by such demonstrations. The invalid who is hoping against hope, and has tried almost all the remedies in use, will do well to put the oil to the test. It may do much good —I never knew it to do harm. From a teaspoonful dose three times a-day, it may be extended gradually to half a pint; any aromatic or a little ale will cover the taste.

Allusion has been made already to the *diet* proper for consumptive patients, and it may be well to say again that a very large proportion of those patients will be the better for a nutritious diet, and one at the same time as little stimulating as possible. Hence milk, sago, arrowroot, tapioca, and the like, are all proper. Some have thought that the milk of the goat, or the ass, is less oppressive than that of the cow, and therefore to be preferred. A good deal has been said of the value of the Iceland and carrageen mosses as articles of diet, and they answer well as a change. But the notion that they possessed specific remedial powers is illusory. The slight bitterness of the Irish moss, with its nutritive quality, make it gently tonic, and therefore calculated to maintain the vigor of the body.

It is of great importance to keep the bodies of consumptive persons well protected against sudden changes of weather. To this end, flannel should be worn next the skin, excepting in the hot season and at night. Several changes should be in use, so that the garments may be kept in good condition. The feet should be protected with care, and, if there be a strong tendency to coldness, let a teaspoonful of Cayenne pepper be spread on the inside of the stocking-foot, just before it is drawn on. This will gently stimulate and keep up a salutary warmth.

Much has been said of the agency of *climate* in connection with phthisis pulmonalis, and doubtless both good and harm have grown out of the views and opinions of writers on this subject. The late Dr. Beddoes attempted to gain all the effects expected from a mild climate by confining his patients in cow-stables, or in something very much like them, where the temperature was uniform and the exhalations supposed to be friendly to the diseased lungs. I believe this practice is nowhere attempted in the present day. That a chilly and changeable climate is unfriendly to consumptives, and a warm, genial, and uniform climate is salutary, will not be denied, for there are many proofs to the point. I knew a

Pennsylvanian who was compelled to remove to Louisiana, many years ago, to preserve his life. He labored under almost constant cough and other symptoms, that excited serious apprehensions for his safety. He was in the habit of revisiting his native home occasionally, to see his relatives, and always realized more or less return of cough and tightness of the chest as a consequence. At his southern home, these things were unfelt. On one occasion, he was compelled to remain in Pennsylvania till late in the fall, when the nights were chilly and damp, and his symptoms became so much worse that he shortly after died. The most suitable climate for persons affected with this disease combines the following qualities, viz., equable temperature, freedom from moisture and sudden alternations of heat and cold. But there is another point about which the physician is often consulted that is even more important, viz., the right time to go from home to test the efficacy of another region. When should the patient go? Now, it is well known that when physicians are teazed by patients with imaginary diseases and unable to be of much service, advice is given to travel just simply to get rid of them. In many instances, this may answer very well, for the patient will, in all probability, not only sustain no injury from the journey but be very sensibly improved. That is not the fact, however, in respect of phthisis. It may be that the physician has proposed a trip to Cuba, or even to the Isle of France, very much because he knew not what more to try in the case. But, alas! the disease, far from being imaginary, was even at the moment of the advice fixing its death seal on the vitals; and the man, instead of returning to his home relieved of an imaginary disease, ended his physical distress in the quiet of the grave. It is not only not humane, but it is cruel to advise a man or a woman, far advanced in this sad disease, to tear away from all the comforts and endearments of home to seek a promised boon in a distant clime that is not within the patient's grasp on earth. If a removal must be made to a land of strangers and of comparative discomfort, let it be in the early period of attack, when the work of disorganization may, if ever, be arrested. But do not give the slightest hint of encouragement to a patient gasping for life and clinging to every straw that a visit to the most delightful region under heaven can save him. Tell him calmly and frankly the truth, and if then he shall determine to make the worse than fruitless experiment, your conscience will acquit you, and the blame will rest on his own devoted head.

To show how improper it is to advise patients to travel by land or by sea, I may mention the fact that the patient often dies by a sudden and unlooked for hemorrhage or violent diarrhœa. With these liabilities, how much better is it to remain at home to be sure of kind and careful attention in the last trying hour. I knew a worthy man, the apothecary of the Philadelphia Dispensary, in 1811, to die most suddenly by hemorrhage from the lungs. He had no sign of that feature of the disease for some weeks; was sitting at the tea-table with myself and another: a crumb of bread or something else seemed to choke him, a cough ensued, he went to the back door and fell into the arms of an assistant, profusely bleeding from the lungs, and died in a few minutes.

A good deal has been said, recently as well as in prior times, about the antagonism of intermittents and phthisis; or, in other words, the doctrine is advanced that the latter rarely finds place in regions where the former are abundant. There would seem to be, therefore, a kind of incompatibility between the two diseases in highly malarial regions. Based on this position, patients in the early stage of phthisis have been advised to try a residence in places constantly subject to intermittents.

M. Ollivier states that of one thousand two hundred patients annually admitted into the hospitals of Venice (a marshy district), not more than seven or eight were phthisical or consumptive. The others were affected with intermittent fever or rheumatism, and the inference of incompatibility has thence been deduced. (See *Braithwaite*, p. 13, page 85.)

It may be that children of ten or twelve, in whom it is very probable there is a fixed, hereditary predisposition to phthisis, might be saved from actual tubercular deposition by being sent to localities abounding with intermittents, or to climates of equable temperature. The experiment is worth making, and we are inclined to believe it would be salutary. Since it is rarely practicable to cure the disease when fully developed, it seems to be the wisest course to resort to the most judicious and rational schemes of preventive policy. The earlier in childhood we make the experiment, the greater is the probability of success.

Elongation of the Uvula.—The uvula is not unfrequently a good deal elongated, as the concomitant of a severe cold, affecting the soft parts of the throat. Sometimes, however, it remains elongated long after the inflammatory symptoms have ceased, and then it gives rise to symptoms and apprehensions that lead to the suspicion that the patient is affected with true phthisis. This, though apparently a small matter, merits attention. We may be called to cases some of the phenomena of which might awaken a suspicion that we were about to contend with one of the most formidable diseases. Among these phenomena, the most prominent is an almost continued and irritating cough, accompanied by an equally constant discharge of mucus; and it may occur from frequent efforts at straining, in order to ease the throat, that more or less blood will be seen in the expectoration. In some of these cases, owing to long continuance of the disease, the patient will become decidedly emaciated, wasted almost to a skeleton. The tongue is coated with a white fur, the chest affected with flying pains, the appetite nearly extinct or small and irregular, and a pain in the region of the larynx, induced by frequent efforts to expel the mucus.

All the symptoms named and perhaps more will be seen in patients laboring under nothing but this elongated state of the uvula. If, influenced by false apprehensions, we set about an examination of the chest, we very soon learn that there are no indications of *phthisis* there. If we look into the throat, we instantly discover the uvula hanging from the pharynx, very much longer than it should be. On inquiry, we gain sufficient information to assure us that the state of the throat has been troublesome for a long while.

The *treatment* is quite obvious. The lower half of the uvula must be clipped off with a pair of sharp scissors. The operation is over in an instant. The pain is momentary, and there is very little, if any bleeding; it is a safe operation. The effect is often instantaneous, and the improvement abiding. It is needful, however, in some cases, to administer tonics, and to enjoin a good diet to recruit the lost energies of the system.

CHRONIC BRONCHITIS.

THE reader will find a brief article in the former part of this volume on *acute bronchitis*, but the chronic variety, which is often exceedingly troublesome to children, has not been noticed. To compensate for this defect, the following remarks are introduced here:—

There are some persons, old and young, who are constitutionally liable to successive attacks of bronchial disease, and it is especially aggravated in the winter months. The parts seem to be predisposed to take on the same kind of disease, after an apparent recovery or considerable improvement; and hence some persons may be said to labor under some form or other of bronchitis for years. Those persons who are called *asthmatics* are often subjects of this malady; and they will tell you that, although never entirely free from it, they are much worse in the winter. They will also aver that the foundation of the mischief was laid in a severe inflammation of the lungs, or in a violent cold badly treated or quite neglected. Yet it must be remembered that an *asthmatic* patient has something more than bronchitis, and of course it is not correct to make bronchitis and asthma synonymous terms. Asthma is, properly speaking, a *pectoral* affection, characterized by great difficulty of breathing. There may be bronchitis without deep-seated pectoral disease, and they may be blended in the same person. A spasmodic difficulty of breathing which marks genuine asthma is not unfrequently combined with inflammation or congestion of the mucous membrane of the bronchial tubes, and sometimes also with chronic bronchitis. When the two diseases co-exist, we have what is sometimes denominated *humoral asthma*, that is, a spasmodic difficulty of breathing, with a large quantity of fluid matter in the lungs. This is precisely the humoral asthma of the older writers.

Chronic bronchitis is, perhaps always, in young and middle-aged persons, the result of a very acute affection. In old people, it comes on and gains strength very slowly, arising often from a catarrh. The augmentation of the disease in the young as well as in older persons is sometimes almost imperceptible. It goes on from winter to winter increasing in violence, without changing its essential character, and at length proves fatal. And although it be not asthma, as we have said, it often lays the foundation for and runs into that disease. We have only to imagine a sudden extension of the sphere of morbid action, so as to involve more seriously the lungs, and we can readily understand how this disease should follow bronchitis.

Chronic bronchitis, whether simple or complicated with a spasmodic condition that makes out an asthmatic state, differs considerably from the acute inflammatory disease of the bronchial mucous membrane, in the nature of the discharge, both in quantity and quality; and it varies in itself in this respect, at different times. Occasionally, the discharge is copious, and sometimes it is only a mere gleet. There is cough under all circumstances, and usually there is a good deal of expectoration. The matter discharged may be frothy, ropy, mucous, serous, watery, and tenacious as gluten or dough. It is sometimes a little like pus, and may be absolutely purulent. The expectorated matter is occasionally very fetid, almost intolerable, and often it is almost inodorous, and quite inoffensive. Now, this dreadfully fetid expectoration is not evidential of a very unfavorable state of general health; for, although it be almost insufferable, not merely by the friends of the patient, but also by the patient himself, yet recovery has often ensued after this symptom or circumstance has been so troublesome. In point of color, the expectoration varies very much. It is blue, black, yellow, green, brown, or slightly red. Its quantity may vary from a few ounces to two or three pints in twenty-four hours.

The other circumstances or symptoms of chronic bronchitis also vary. There may be a good deal of difficulty of breathing, but sometimes there is none at all, or very little. If there be also congestion of the lungs or spasmodic constriction, the respiration will be impeded; indeed, in some cases, the patient cannot lie down, and the interruption in the play of the lungs is so great that it causes cephalic plethora, with distension of the jugulars and vessels of the face and neck generally, so that the face is made almost black. In such cases, the extremities often grow cold and blue, and there is a diminution in the urinary discharge. In these attacks, the state of the pulse is very variable. It may be full, or small and feeble.

Some of these cases of chronic bronchitis have been mistaken for hydrothorax, and treated accordingly. The symptoms of oppressed breathing, especially in the lying posture, have led to the inference that water in the chest was the source of all the evil. But if we listen with the ear to the chest of a person laboring under hydrothorax, we cannot hear respiration at all in the lowest part of the chest; whereas, in mere chronic bronchitis, we hear it readily. And, although after death we find the lungs congested with blood, so that they refuse to collapse, yet no water can be found in an ordinary case of chronic bronchitis. Besides, the absence of respiration in the case of hydrothorax, if we strike the chest with the hand, and water be present, we have no hollow sound, any more than if we struck the thigh or any solid part. We have said that chronic bronchitis may be attended with congestion of the lungs, but it may also exist without any such congestion.

Chronic bronchitis has often been mistaken for phthisis. This is especially the case when there is much expectoration and the discharge looks like pus, little dyspnœa and no marked congestion, and a wasting away, attended with some hectic symptoms. Many persons thus affected, and who get well, are supposed to be miraculously saved from pulmonary consumption.

The *catarrhus senilis,* or old man's cough, is a variety of chronic bronchitis, according to Laennec and others. It is attended with various degrees of congestion, and sometimes with none at all, but is often accompanied with a copious and viscid discharge. This kind of bronchitis is more frequently conjoined with asthma than any other. Frequently, the viscid character of the discharge augments, until the small branches of the bronchial tubes are nearly blocked up; and occasionally small masses are formed of the size of hemp or millet seed, and of a gray color.

When chronic bronchitis continues in a child for a long period, unmitigated, it causes very considerable alterations of structure. The bronchial tubes become very much dilated, and sometimes appear to be hypertrophied throughout their texture. Sometimes the dilatation is unattended with enlargement of the substance of the tubes, which, on the contrary, are very much attenuated, so as to be mere membranes. In the latter case, the patient usually complains of great debility, and breathes with much discomfort.

But chronic bronchitis will sometimes give rise to the opposite of expansion, viz., diminution or contraction. Occasionally, lymph is effused within so freely as to obstruct the passages completely. This occurrence gives rise to what is termed *bronchial polypus*. It is very like what we see in croup, only that in the latter case the effused matter takes on a different form. Sometimes, after a long-continued chronic inflammation has caused this obstruction, a sudden change ensues, and the patient spits up a great quantity of matter, with obvious relief. Prior to this discharge, it may be difficult to hear the respiration by applying the ear, but afterwards the murmur is quite perceptible.

Chronic bronchitis gives rise to another change, viz., dilatation of the air-cells, to which the name emphysema has been applied, though improperly. The smaller branches of the bronchial tubes terminate in the air cells, and, owing to this connection, the cells may be also dilated.

This is called *emphysema* erroneously, because this form of disorder implies the presence of air in the cellular membrane, whereas the air is only in the air-cells, the enlargement depending on the expansion of the cells, by reason of which they contain too much air. .If these enlarged air-cells be very numerous and some of them very much dilated, the sides of the cells may be ruptured, and then a communication is established between them and the cellular membrane, in which event we have true emphysema. The lung may attain to a large size before a rupture, and suddenly the cellular texture will be inflicted.

The causes of this excessive distension of the coats of the air-cells and their rupture may be a violent inspiration and retention of breath, as occurs in blowing a wind instrument; or it may be mere debility of structure, or loss of elasticity, but most frequently it is a want of due expansion of the lungs. Whatever prevents one part of the lungs from dilating, causes the greater dilatation of other parts, and hence there is in some portion a state of over-distension. Hence, in chronic bronchitis, where some parts are affected with obstructions and dilatation of the cells prevented, other parts of the lungs experience a greater degree of expansion than is natural to supply the deficiency caused by the obstructions.

If, when the air-cells are greatly dilated, we strike that part of the chest with the hand, a sound is heard exactly as in health, and sometimes it is even more clear. If we listen to the respiration at the same spot, we perceive very little murmur. As there is large dilatation, the usual rustling sound is wanting. The air in the part is stationary, not passing to and fro; the part is not expanded, and the consequence is that very little motion takes place in the contained air.

It is said that when this state of things is very extensive the inspiration is made with a crackling sound, as though the air were entering and distending lungs partially dried, and the cells of which had been all dilated. The lungs are actually drier in this state than in health; and when the disease is extensive, we have the sound already named—a sound not unlike that of blowing into a dried bladder, called by Laennec the *dry crepitous rattle, with large bubbles.* This sound is not often met with, and is thus explained: When the smaller tubes are greatly dilated, they approach to the size of the larger ones, and of course emit the same kind of sound. If the air-cells be much expanded, we do not find the same minute murmur that is detectable when it comes from a thousand very small and undilated cells. And as air, and only air is present, we must have a clear sound as in health, and this will be more perfect in proportion to the degree of dilatation.

As to the remedy for this highly dilated condition of the tubes or air-cells, it is proper to say we have none. If relieved at all, nature must do the work, and here is a fine field for the exercise of her powers. Doubtless she sometimes succeeds in restoring soundness of structure and health of function to these as to other parts.

We are next to speak of the *treatment* of chronic bronchitis. And the first remark to be made refers to the term *chronic*, from which some persons deduce an argument against depleting remedies, altogether overlooking the fact that a highly active state of inflammation may supervene in a case of chronic disease, though we concede that such is not often the fact. The patient may be robust, and yet may have labored under the disease for months or years; and if his symptoms be inflammatory at any time, he must be treated accordingly. But bleeding must be employed in all these cases with great care, as the system sometimes sinks very unexpectedly under its influence. Hence the importance of being certain that symptoms of inflammation are present, before we resort to antiphlogistic means. The cases are much more numerous, in which depletants are quite inadmissible. Sometimes, from the violent efforts of coughing and the difficulty of breathing, we find the face almost black, the body bloated, the legs swollen, and a very little urine passed. In such a case, some physicians draw blood freely; but it is often a hazardous remedy. If a vein be opened at all, let a finger be kept on the pulse, and watch it carefully. If it rise as the blood flows, the remedy is proper; if it sink, close the orifice at once, or serious mischief will be done to the patient. In these cases, two or three cups should be placed between the scapulæ and on the front of the chest, or a few good leeches instead.

Emetics alone, or combined with diuretics, are found to be very useful. In the chronic form of bronchitis, especially in very young or old persons, ipecacuanha is decidedly the best emetic we can give. And we may administer it every day, not only without risk but with positive benefit. Tartar emetic is too debilitating for such patients, especially if oft repeated. And it is better to give full doses of ipecacuanha than small ones. From five to fifteen grains for children, and from twenty to thirty for older persons, may be given in a cup of warm water. This will induce free vomiting and afford speedy relief. The best time to give it is in the morning, before eating. It clears out the bronchial tubes in virtue of its relaxing power, and this too without greatly depressing the vital forces.

In the acute bronchitis of children that has continued a good while, we may give the ipecacuanha twice or thrice a-day with advantage. It fails to irritate painfully the stomach, and unloads the bronchial tubes efficaciously. This is especially proper when we fear to carry the evacuating plan any further. In fact, the disease in these cases seems to be very much of the chronic kind. An additional advantage of the repeated dose of ipecacuanha is that it seldom fails to excite sufficiently the action of the bowels.

But we sometimes derive much benefit from the union of emetics with diuretics. The air-cells and tubes contain a good deal of serous fluid, which it is desirable to remove as soon as may be, and hence we should aid the emetic operation by the agency of diuretic medicine. To this end, digitalis and squills may be combined. If diuretics be given without emetics, we do well to add a little calomel; or we may combine calomel with squill and digitalis.

℞.—Pulv. digital. ℈i;
Pulv. r. scill. ʒij;
Calomel ʒi;
Mucilag. g. Arab. q. s. to make forty pills.
Take one (adult dose) every two hours.

If the mouth should be made a little sore by the calomel, it will be none the worse; but it should not be made more than a *little* sore—the gums slightly swollen and tender. This combination acts well on the kidneys also, while it promotes expectoration.

Some physicians have spoken highly of the use of copaiba in chronic bronchitis, but I have not realized the same success with some of my brethren, whose judgment I respect. It is, moreover, an offensive remedy, and highly so to some persons. Yet that would not warrant its rejection. I have derived much advantage from the milk of assafœtida, and also from the following combination:—

℞.—Tinc. digit. ʒij;
Tinc. opii ʒi;
Tinc. tolu bals. ℥ij.

The dose is a teaspoonful every two hours in a little water for an adult.

Indeed, I find this mixture very useful in almost any cough of old and infirm persons where there are no signs of inflammatory action, and in reduced doses it is well suited to children.

We will also derive help in these cases from blisters placed between the shoulders, and kept open by means of an irritating ointment. Some resort to the tartar emetic ointment, but it is in no respect better than blisters, and is often a more troublesome application. If it be necessary to give soothing medicines, I should prefer always a portion of Dover's powder, because it tends to relieve the chest, to excite the skin, as well as to compose the system. But if there be serious objection to internal medicines for this purpose, let the cuticle be removed by means of a small blister, and apply from a quarter of a grain to a whole grain of the acetate of morphia.

The inhalation of various substances gives more or less relief. Hot vinegar and hops, hot vinegar alone, or even hot water, inhaled from a common tea-pot, are good expedients. Chlorine, iodine, and even prussic acid, much diluted, have been employed in the same way, but they require much judgment for safe exhibition. The vapors of tar and the drinking of tar water have done good. Residing in the vicinity of a tan-yard has given relief, and inhalations from the tanner's liquid are also spoken of favorably.

But there are, now and then, chronic cases in which there is great and long-continued debility, and the whole system seems to be relaxed. In these, small doses of the sulphate of iron have been very useful. Such a case is to be found in the *Medico-Chirurgical Transactions.* A young girl was thought to be far advanced in consumption, but had only chronic bronchitis. She expectorated copiously, and had some hectic fever; was greatly debilitated, and coughed a good deal. By taking three grains of sulphate of iron twice a-day for a few weeks, she was completely cured. This medicine speedily put a stop to the incessant tickling of the throat and thus allayed the cough, and the general health was at length established.

ACUTE RHEUMATISM.

THE important relations of this disease to cardiac affections, and its frequent occurrence in very young children, entitle it to a prominent place. Dr. Latham, in his excellent work on disease of the heart, has shown that in more than two-thirds of all the cases of rheumatism in public and private practice, disease of the heart is also found. And in respect of the infantile nature of rheumatism, it may be stated that Coley gives a case in a subject only a year and a half old, and I have treated it in children under five years of age. That it may be and probably is a disease of adult life more frequently than of infancy, does not at all touch the question; and a work on the diseases of children would be as imperfect without a notice of it as if cholera infantum were omitted.

The remarks to be made on acute rheumatism of children will apply with equal force to the gout of very young subjects, and therefore it was not deemed advisable to give a separate article on the latter topic. The more we learn of the true pathology of these diseases, the more are we convinced of their essential identity. Children do often inherit such a diathesis, as will if unchecked or not subdued by appropriate means, make the development of rheumatism or gout a matter of certainty. The sudden and violent action of cold or other exciting causes may develop this morbid diathesis in a very early attack of one or the other of these painful affections, and hence we are called to treat them in quite young patients; so young, indeed, as to excite a smile and doubt when we name rheumatism or gout as the disease under treatment.

That acute rheumatism, as well as gout, is in a very important sense a disease of the whole system, we do not doubt. This is rendered more than problematical by the able researches of Dr. Todd, and others of Great Britain, who refer the pathology and chief causation to a peculiar *materies morbi* in the blood, which is most probably the lithic or uric acid, and the lithates or urates. Drs. Edwards and Golding Bird evidently hold this opinion; and they explain the action of the most successful remedies by their power to eliminate from the blood by the kidneys, skin and bowels, all excess of the morbific acid.

In addition to the cause referred to as seated in the blood itself, and constituting the basis of predisposition to the disease, we name all the ordinary causes of inflammatory action, as exposure to sudden vicissitudes of weather, over-heating and sudden cooling, severe exercise, and the like. One of the severest cases I have ever attended was in a young child in whom the disease was brought on in hot weather, by two other children running the little fellow repeatedly round a square, each having hold of a hand. The wrists and ankles, suffering the most violence, were the seats of the disease, which owed its manifestation as acute rheumatism to the pre-existence of the rheumatic diathesis.

Acute rheumatism has been divided into *acute* and *chronic*, *inflammatory* and *non-inflammatory*, &c. The acute or inflammatory form is also known as rheumatic fever, or the rheumatic state of fever, terms which are significant enough.

The *symptoms* of this disease are found in the skin, the joints, the pulse, the urine, the heart, &c. In the skin, we find great heat, tenderness, redness, tumefaction; in the joints the same, with a tendency to induration by reason of effusion of coagulable lymph. The pulse is for the most part quick and tense, though occasionally full and hard. The urine, just before seizure and after the reduction of febrile action, is very high colored and sedimentary, being heavily charged with lithic or uric acid. The heart presents no symptoms at all, unless actually involved by the severity of the attack, and then it will present sounds according to the nature of the cardiac implication. The most decided case of organic disease of the heart I have ever treated successfully was induced by a very acute rheumatic seizure, and the subject was a lad under twelve years of age.

The *diagnosis* of rheumatism and gout, or of rheumatic gout, is so easy that we need not dwell on it. The *prognosis*, although not quite so clear, is generally favorable. If the disease be met early and promptly by suitable means, it will terminate favorably. The doubtfulness of the result turns very much on the fact of the heart being involved, and the extent of its implication. The *treatment* has been and continues to be variable, and almost opposite. The immediate proximity of this affection with heart disease in the present work is with the design of connecting the treatment of the two, and showing the bearing of a right management of the one on the successful issue of the other.

The failure of an exclusive depletion by the lancet to subdue the febrile and inflammatory features of the disease, led some to doubt whether these features were real, inasmuch as the grand antiphlogistic has so signally failed. In France especially has the lancet been tested to its ultimate power; and not only without success, but with many sudden deaths as the consequence, so that physicians have taken the alarm and abandoned the *ad deliquium animi* method of depletion.

We regard the entire history of the above method of practice as confirmatory of the views of Todd, Edwards, and others, touching the pathology and etiology. If acute rheumatism owe its existence and manifestations to the presence of lithic acid in the blood, and if the cure depends on the elimination of that acid from the blood, it follows that mere abstraction of blood from the system is not a remedy. Unless the entire mass of the vital fluid be removed, the morbid quality would remain, and the same diathesis which engendered the lithic acid would reproduce it. Bleeding, therefore, cannot cure acute rheumatism.

The practice of Latham, Duncan, Todd, and others is more rational. These gentlemen bleed once moderately, from twelve to fifteen ounces in an adult, but rarely repeated the use of the lancet. The operation prepared the way for the more salutary action of the subsequent treatment. At bedtime of the same day, a dose was administered, consisting of ten grains of calomel and a grain of opium, or ten grains of calomel and ten of Dover's powder. On the next day, an active purgative solution was given, consisting of infusion of senna, Epsom salt, and calcined magnesia. This treatment was repeated, if needful, for several days; and if colchicum were given at all, it was added to the purging mixture, say twenty or thirty drops of the acetic tincture. The only application to the painful parts was carded cotton, or warm water, or cod-liver oil, avoiding leeches, blisters, and all counter-irritants.

In all the modifications of this practice that have been made, there seems to be an obvious intention to check inflammatory action by a moderate bleeding and mercurial action, to eliminate morbid matter from the system by the bowels, skin, and kidneys, and so to cure the patient and save the heart from being involved. The mild local appliances named are decidedly superior to all the active topical remedies of former times, which tended to induce a fatal metastasis to the heart, while they often failed to give relief in any respect.

As to the colchicum practice chiefly for which some have contended, we agree with Dr. Latham that it is altogether too much like working in the dark. It is only proper as an adjunct to other means in the way already suggested.

Some physicians have professed to cure acute rheumatism by the use of emetics, two or more times a-day, for a week or ten days. They have generally combined tartar emetic with ipecacuanha for this end, and I am free to say that the practice may be a good one. It will insure an elimination from the system of morbid matter to a very large extent, not only by the mouth but by the skin, bowels, and even the kidneys also.

In the cases of young children that I have treated, my first expedient has been to detract blood to a moderate extent, and to administer the following powders three times a-day for a week, occasionally interposing an active cathartic dose:—

R.—Nit. potass. ʒi;
Ant. tart. gr. i;
Cal. ppt. ℈i.
Mix intimately and divide into ten powders.

To the painful parts, wilted cabbage leaves were kept constantly applied, care being taken to renew them so as to have them always soft and moist. The diet, in all cases, is of the lightest kind, and the drinks barley water, toast water, gum Arabic water, &c.

In some cases, I have relieved rheumatic patients by the persevering use of antacids alone, as the bicarbonate of soda. The obviously acid condition of the stomach justified the remedy, and it proved successful. But that it acted very much on chemical principles, by subduing the acid diathesis of the system, I cannot for a moment doubt.

The common saltpetre, or nitrate of potash, has been highly commended as a remedy for acute rheumatism. Its well-known antiphlogistic properties entitle it to notice, and the success of the medicine is a warrant for future use. It has been given lately in as large quantities as ten drachms in the course of a-day, and frequently to the extent of six and eight drachms. It not only reduces general excitement, but acts powerfully on the kidneys, and thus eliminates morbid matter copiously. (See *Braithwaite's Retrospect*, part 19.)

The phosphate of ammonia has been administered with much success after venesection. The dose is from ten to thirty grains three times a-day. It corrects the uric acid diathesis, and eliminates by the kidneys. (See *Ranking's Abstract*, No. 7, and the *Philadelphia Medical Examiner.*)

The French report large success in the use of pretty large doses of sulphate of quinine in the treatment of the most acute rheumatism. Fifteen and twenty-grain doses have been administered for this end. Prof. Dunglison, in his *Medical Intelligencer*, reports favorably of this practice, in some cases that came under his notice in the Blockley Hospital. Success is also reported in the use of cold applications to the painful parts, aided by the internal use of the sulphate of quinine and opium, in *Ranking's Abstract*, No. 7.

In my own opinion, the *eliminating* or *depurating* practice of Todd and Bird will more certainly cure acute rheumatism and prevent the chronic state which so often follows a half treatment of the acute variety, and at the same time avert heart disease as a consequence of rheumatism, than any other plan that has been devised. A bleeding having been premised, and that never to excess, let all the outlets of the system be put in requisition, as the kidneys, the skin and bowels, at the same time controlling inflammatory action by a moderate use of calomel or blue mass, and the disease will soon yield, in nine cases out of ten.

Should the chronic form be established, it is probable that a moderate use of the same means as for the acute disease will be requisite. But it would seem that no medicine is better suited to this variety than the phosphate of ammonia, before named. Some remarkable cases are cited by Edwards, in which patients were rescued from a state of almost helpless decrepitude by this medicine in a few days. I have known many persons to be sensibly relieved by the persistent use of the cod-liver oil, and in every case of chronic rheumatism in a scrofulous habit it is of the last importance to give it a fair trial. It is decidedly safer than many other remedies in use, and I doubt not more efficacious.

DISEASES OF THE HEART.

The actual frequency as well as the fancied prevalence of diseases of the heart invests this topic with great interest. The extreme severity of the symptoms, and the fatal issue of real heart disease, have made every affection of this sort to wear a formidable aspect. Nor does this feature abate, but rather grow in magnitude, by reason of the tendency of many minds to take it for granted that they have in their own persons the seeds of the malady, if not the disease itself. I am well aware that there is a kind of fashion in this matter, and this, too, based on the proneness of some medical men to pronounce, as heart disease, many affections which are not of that nature. Although the works of several able men have long been before the profession, there are hundreds of physicians who have never made the diseases of the circulating system a part of study. Even in the present day, when works relating to this topic have been multiplied, and the facilities of investigation have been greatly increased, not a few practitioners remain as ignorant of the true characters of these diseases as if no one had ever made them objects of special and close examination.

The well-known fact that very young children are frequently assailed with disease of the heart, is an important reason why this subject should find a place in the present volume; but I am moved by an additional consideration, viz., a desire to induce medical men to investigate this topic with care, so as to be prepared for all cardiac affections that may present themselves, whether in the old, the middle-aged, or the very young.

The remarks already offered in respect of percussion and auscultation, as means of studying the diseases of the respiratory organs, are not less forcible in their application here. We are well aware that some have objected to the use of the stethoscope in diseases of the heart, that we cannot tell by its aid with certainty whether a patient is suffering from nervous palpitation or from organic disease. But these persons seem to forget that by none of the means of distinguishing these affections in their possession, have they been able to succeed in all cases. The argument, therefore, would be equally valid against all their old means of diagnosis.

There has been and is still a prevalent opinion that real heart disease is necessarily incurable, and that, such being the case, the revelations of the stethoscope, making the nature of the malady certain, must do mischief by leading to despair, and a consequent neglect of proper means. All this is erroneous. The premises and conclusion are alike false. The more accurate and certain our knowledge of the nature and location of a disease, the more appropriate will the treatment be. This is a very natural and just inference.

But this is not all. It is due to the cause of truth to affirm that patients have been pronounced to be incurable consumptives, or suffering from bad treatment for indigestion and gastric irritation, who had disease of the heart. Others have been ridiculed for yielding to mere nervousness, or dyspepsia, who labored under excessive dilatation of the heart, and who were directed to avoid vegetable and slop diet, and to eat freely of beefsteak. And worse than all this, some have been exhorted to take exercise when in such a diseased state that the slightest effort would bring on severe dyspnœa and semi-suffocation. These mistakes have been detected over and over again by a proper use of the stethoscope.

We prefer to pass by the consideration of nervous affections of the heart, as they are seldom seen in young children, and are very difficult of detection. None of these have any very serious associations with other forms of morbid action, and for this reason we may omit them.

The inflammatory diseases of the heart are of great moment, not only at the time of attack, but prospectively, and therefore claim our particular attention. We shall notice briefly pericarditis, carditis, and endocarditis, under the conviction that competency for the management of these will qualify the practitioner for all other forms of heart disease to which children are liable.

Formerly, all diseases of the heart characterized by symptoms of an inflammatory character were confounded, and indistinctly understood. In later times, under more careful observation, the varieties of inflammation of the heart, and the concomitants, have been more definitely stated, and are now better understood. We are first to treat of

Pericarditis.—By this term is meant inflammation of the pericardium, as well as the external serous covering of the heart. It is, therefore, clearly distinct from inflammation of the substance of the heart itself, as well as from inflammation of the membrane lining the inside of the heart, although all may be and are sometimes combined.

It has been and is yet believed by many that pericarditis is a very rare disease. This is a mistake. The disease is much more frequent than most practitioners have supposed. As it is a disease quite distinct from the purely nervous affections already spoken of, it is to be expected that dissection will disclose its true character. Such is the fact, and hence we proceed to say a few words of its

Anatomical Characters.—The knife displays a partial or more general redness; patches as if the membrane were injected, sometimes dyed red, groups of deep red points, &c. But the red color is seldom very deep, and in the severest cases, it has been found quite faint. A difference of opinion obtains as to thickening of the membrane; but it is coated with fibrin, thicker and more consistent than in pleuritic inflammation, and the fibrin differs from that of pleurisy, in its greater irregularity and unevenness.

The proportion of serum effused, compared with the fibrin, is less than we find it in pleuritic inflammation, averaging about a pint, sometimes a good deal more, while occasionally almost none at all is found. It is of a light, lemon color, more often turbid than limpid, containing flocculi of lymph of variable size, sometimes quite curdled, so as to give the impression at first that only one kind of effusion had taken place. Sometimes the matter effused is bloody or puriform. Dr. Baillie saw a quart of pus in a pericardium very much inflamed but not ulcerated. In 1811, I saw in the Philadelphia Almshouse full that quantity, and sponged it out of the chest myself. The man was brought into the house for delirium tremens and fracture of the clavicle, and died soon after admission. It was our custom to make *post-mortem* examinations of all cases, and in this, the pericardium was found to be immensely distended by the great quantity of pus before named. There must have been actual pericarditis here, but there was little other trace of previous inflammation.

In chronic forms of this disease, we find a more diffused redness, and inflammatory tokens almost always universal. If fibrin be found, it is thinner and softer than in the acute variety. The effusion is always turbid.

In the progress of an acute attack, as the time passes, there is a gradual absorption of the effused liquid, and the fibrin is found adherent to the cardiac and parietal portions of the pericardium, and adhesions here and there, presenting somewhat the appearance of sacks. Sometimes the adhesions are quite thick and fibrous, rather fleshy, though sometimes even cartilaginous or bony. Sometimes the adhesive process is so universal that no pericardial cavity can be found. I once saw a case pretty much of this kind. Such rare instances have led to the supposition that there was a total absence of pericardium. In some cases, there are cartilaginous knobs found dipping into the heart's substance quite deeply, indicating the greater intensity of the inflammatory action and pain, in spots corresponding with the actual sensations sometimes spoken of by patients. It is also said that the fibrin occasionally shows a cellular arrangement merely, and lies like lace on the heart's surface, of a pale tinge; or it is an opaque patch, easily peeled off, or it may partly adhere so as to identify itself with the substance in form of white granulations. Evidence of effused lymph is seen often in bands that connect the pericardium with the pleura.

The substance of the heart is not always changed by pericarditis. It may be redder or paler than natural. Sometimes it is yellowish or brown, softened or indurated. When the disease has assumed the chronic form, and continued long, the whole substance has been found hypertrophied. The softening of the heart is usually accompanied by effusion of bloody serum. The chronic form presents, not only pericarditis, but the substance of the organ and its lining membrane, especially the valves, will be found to have suffered. And now and then this general inflammatory condition will be seen after a very severe acute attack.

Elliotson says that most cases of diseased heart, whether of the substance or valves, arise from or spring up during inflammation of the pericardium. Furnival says that *pericarditis* seldom precedes *endocarditis*, and that signs of the latter are usually seen first. It is not easy to demonstrate these points. What are the *causes* of pericarditis? We reply, in general all the causes that induce inflammation of serous membranes. Doubtless the most frequent is exposure to cold, especially after a warm temperature; the agency of great and sudden vicissitudes in the weather—especially is this true if there be rheumatism already present. It may arise by sympathy with the fibrous membranes of parts attacked by rheumatism. Sometimes pericarditis occurs simultaneously with rheumatism, sometimes not until some days after this disease has disappeared, but occasionally there seems to be a sudden metastasis, the rheumatism instantly ceasing and the pericarditis directly supervening.

I think there can be no reasonable doubt that pericarditis and rheumatism are somehow related. What is the precise nature of that relation, or what its source, is not sufficiently defined, and perhaps it cannot be. The relation was first noticed by Pitcairn, in 1788, since which date other observers have spoken of it. It has been very generally seen that when a young person has died of disease of the heart in connection with rheumatism, the evidences of pericarditis were manifest. We cannot say that rheumatism certainly *induces* pericarditis, or *vice versâ;* yet we certainly do find in rheumatic patients, especially the young, obvious proofs of pericarditis.

Let it be borne in mind that while it is, perhaps, quite proper to say that there is a close relation between rheumatism and pericarditis, it may not be quite so correct to speak of the close relation of rheumatism to disease of the heart itself. If rheumatism be found to co-exist with actual disease of the heart, it will be seen, on due research, that inflammation of the pericardium first existed, that it was not well managed, and that, as a consequence, the heart itself suffered and organic disease ensued. It must be remembered that inflammation of the pericardium may be controlled almost as readily as inflammation anywhere else, while the most we can do with organic disease of the heart itself is to palliate. We know that neglected inflammation anywhere, or the same badly treated, will lead to organic disease of adjacent parts. Hence the importance of meeting the inflammation as such, and promptly subduing it. It will be understood from what has now been said how far it is proper to speak of rheumatism as a *cause* of pericarditis. Owing to the relation spoken of, we frequently hear the phrase *rheumatic pericarditis,* and we find it mostly in persons between the age of puberty and thirty, though sometimes seen in earlier life. Elliotson thinks he met with it once in an infant. I am very sure that I have known true pericarditis to follow severe attacks of acute rheumatism in the course of two or three weeks, in young persons, and the inference of rheumatic agency in such instances would seem to be unavoidable.

Pericarditis, when not severe, may remain a long while as mere pericarditis, a pure inflammatory affection. It may be cured or it may persist a good while, and not end in further organic disease. In some cases it will prove very troublesome, as on sudden changes of temperature, when a fresh attack of rheumatism is realized.

The Symptoms.—We look for more or less actual fever in inflammatory affections, and here we have it. In the cardiac region we discover pain; this is often lancinating and very severe, darting through to the left scapula, then to the left clavicle and shoulder, down the arm towards the elbow, and rarely extending to the wrist. Pressure directly over the cardiac region augments the pain, and so does pressure against the diaphragm under the cartilages of the left false ribs. Sometimes pain is increased even by pressing over the epigastric region or in the left hypochondriac. Inspiration or lying on the left side sometimes makes the pain worse. In general, patients are most comfortable on the back.

The respiration is obviously increased though less hurried than in affections of the lungs. If any cough attend, it is dry. There is palpitation on the least exertion, and it may be violent. The pulse is quite variable. We should expect to find it quick and often small in volume; it may be intermittent or irregular, but it is not always hard, and seldom very full. The anxious and contracted countenance spoken of by some is not seen excepting in cases where the pain is very acute, and the same thing is seen in severe pleurisy.

The *physical signs* are not to be overlooked in this disease. If the ear be applied to the cardiac region, we discover the whole heart to be acting more forcibly than it does in health, and the sound is clearer. But this is about the whole, if the case is simple pericarditis, according to some of the authors. Collier tells us, however, that a very peculiar sound, resembling the crackling of new leather, is pathognomic of acute pericarditis, although not always present in that disease. Latham says the *bellows* sound is distinctly audible, and Hope supposed it to depend on increased force of the heart's pulsation. Bouillaud, Furnival and others assert that this sound does not so much indicate pericarditis as its complication with endocarditis. This sound is heard both during the systole and diastole of the heart. The *friction* sound is more insisted on by some writers, and is believed to depend on the friction of the contiguous surfaces involved in inflammation, viz., the lining of the pericardium and the membrane covering the substance of the heart. These are made more or less rough by the deposit of coagulable lymph, and hence rub each other, so as to give the *friction* sound, or a noise not unlike the crackling of taffeta or stiff silk. Bouillaud says this sound is heard only during the systole of the ventricle. If there be much effusion into the pericardium, the friction will be prevented, and percussion will give a dull sound.

I suppose that the leading symptoms already named, together with the friction sound, will serve sufficiently well to point out the presence of the disease.

The *prognosis* is very doubtful. The younger the subject, if early treated, the greater is the probability of recovery. The chronic form, being complicated, gives rise to more or less disease of the substance of the heart; and in many cases has induced such extensive disorganization that medicine could not meet the case.

Diagnosis of Pericarditis.—Many persons have supposed that the diagnosis of pericarditis is exceedingly difficult. The most accurate observers have found the disease when they had not suspected it, and have proved its absence where they had expected to have found it. But I think if the general symptoms and all that can be gained from auscultation be combined, we shall be as likely to succeed as in most other forms of disease. The extension of pain from the region of the heart to the scapula, shoulder, and partly down the arm, in connection with the increase of the pain by strong pressure on the cardiac region, may be regarded as the most striking symptoms. The close connection with acute rheumatism is also an important item. Indeed, it should be our aim in all cases of acute rheumatism, to examine for pericarditis. Did we attend to this point, we would not be so often surprised by the sudden death of patients from what was supposed to be acute rheumatism only.

The Treatment.—This is, for the most part, the same as for active inflammation in other parts. It should be borne in mind that this inflammation is seldom violently active or acute, and is mostly disposed to become chronic. In acute, but not very severe pericarditis, local bleeding may suffice, and often will. Indeed, unless the constitutional symptoms demand general bleeding, we shall find the local depletion much more safe and salutary. It is, at all events, a well-established, practical fact, that very copious general bleeding will not usually answer. As the tendency to serious morbid changes is slow, it seems to be desirable to deplete just enough to keep the inflammatory action in check so as to prevent those changes.

It will be of use at the same time to administer blue mass in such a way as to excite very gentle ptyalism. This will cooperate with the moderate loss of blood, very favorably in most cases. From one to three grains may be taken at bedtime. Colchicum has a high reputation in gouty and rheumatic affections, and hence it has been resorted to along with venesection or leeches, in the management of pericarditis. From twenty to fifty drops of the acetic tincture may be given from once to thrice a-day, to excite some emesis and catharsis. And even after it is probable the inflammatory action is subdued, it will be serviceable to administer the colchicum for weeks or months, for the purpose of allaying morbid irritability of the heart.

It is very rarely that external stimulants, as sinapisms or blisters, do much good, because their action is allowed to be too transient. If we make deep pustulations on a surface three or four inches square, in the cardiac region, and keep up a discharge for several months, it will be seen that local means can avail. This can be accomplished by rubbing into the parts night and morning, until deep pustulatious are made, one of the following mixtures, taking care to protect the eyes from contact with it.

R.—Ol. crot. tig. ʒss ;
Antim. tart. ℈j ;
Ol. olivar. ℥ss.
Mix.

℞.—Ol. crot. tig. ʒj;
Antim. tart.,
Pulv. ipecac., āā ℈j;
Ol. olivar. ℥ss.
Mix.

In some persons, owing to cutaneous insensibility, it will require half a dozen frictions to induce the desired pustulation. As soon as the skin is very painful and tense, let a soft bread and milk poultice be applied, and continued until pustulation is manifest. A dressing of cerate afterwards will be soothing, and the moment the irritation begins to abate let the pustulating mixture be repeated.

I have treated two cases of pericarditis recently, in young lads, with complete success. There was some complication with endocarditis quite manifest; and besides the ordinary symptoms, there was in one of the boys, an œdematous aspect that made me doubtful of the issue. The treatment consisted in the observance of quietude, and the avoidance of all exciting causes, and the counter-irritation just described, together with the following:—

℞.—Acet. ext. colchici ℈ij;
Blue pill mass ℈j;
Pulv. ipecac. ʒss.
Mix. To make twenty pills.

In the first few weeks, tartar emetic was employed in lieu of the ipecacuanha, to meet the more inflammatory aspect of the cases. Subsequently, the ipecacuanha was substituted as above, a pill to be taken night and morning, and after a time one at night, and then one every other night. By perseverance in this management for about four months, the œdematous-looking boy became fat, of a florid hue, greatly invigorated, and not a vestige of his heart disease remaining. The other lad recovered in a shorter space of time. Occasionally, the pills were laid aside for three or four days, and then taken as before. I regard this as a wise course in the prolonged use of all potent alteratives. But it must not be for a moment forgotten that perseverance is indispensable.

Carditis is inflammation of the muscular substance of the heart, independently of membranous tissue. Fortunately, it is a very rare disease; and some have denied its existence altogether, holding the proofs of it to be impracticable. But dissection has shown such a condition of the heart as to warrant the belief that inflammation had stricken deep into the very texture of the organ. The entire muscular structure has been found deeply tinged with black-colored blood, and incisions into the substance caused the escape of a large quantity of purulent matter.

But can we readily distinguish this disease from pericarditis and endocarditis? I think not. It is more than probable that when this form of cardiac inflammation exists, the others are also present. The inflammation in carditis may be confined to a small part of the substance, and an abscess may result. Sometimes there are obvious ulcerations external or internal, the latter being the more usual. It is doubtless owing to ulceration that rupture takes place, an event almost always followed by instant dissolution.

The *treatment* of carditis is precisely the same as for pericarditis.

Endocarditis is inflammation of the lining membrane of the heart; and, although very generally associated with thickening of the valves, is a different disorder. It is an acute disease of the membrane, and may exist apart from actual valvular disease.

True endocarditis may be a primary or a secondary disease. In the latter case, it almost always comes on during the progress of pneumonia, or acute inflammatory rheumatism, when it is apt to be connected with pericarditis. As a primary affection, it arises from the ordinary causes of inflammation, acting with greater force if the heart be previously enlarged. Whether primary or secondary, there is present one change that is sometimes found in other inflammations, though to a less degree, viz., a highly fibrinous state of the blood, with a marked tendency to the formation of coagula in the heart. This condition of the blood is more often a cause than effect of endocarditis, and may flow from any other inflammation and then react on the lining membrane of the heart.

The *physical signs* of endocarditis are even less distinctly marked than those of pericarditis with large effusion, yet more decided than those of the slighter varieties. As soon as it is established, the heart's action is more or less impeded, and the contraction of the ventricles is hurried and confused; hence a bellows murmur is developed in the first sound of the heart. This becomes a rasping sound if the valves be much thickened. The second sound of the heart is much diminished, and to a certain extent suppressed from the first; not from thickening of valves, but from congestion of the heart which necessarily attends endocarditis, and which always diminishes the second sound. Besides presenting the bellows or rasping sounds, the action of the heart is disturbed, so that it contracts spasmodically and without the sharpness of impulse and regularity of time so obvious in the healthy heart. Hence the action of the heart in endocarditis is confused. In most cases, it is not strictly irregular, although this sometimes happens; nor does it give the strong heaving impulse of decided hypertrophy.

The *general symptoms* are very variable. There is pain, or at least a sense of stricture and uneasiness across the chest, with more or less febrile excitement, rising, it may be, to high fever, with an active pulse. Sometimes, however, the pulse is small and feeble. When the disease continues a considerable time, as for weeks, the subcutaneous tissue becomes infiltrated, and acute dropsy may follow.

The *treatment* is to be conducted on the same principles as apply to pericarditis; or, if a difference be made, the measures should be more prompt and decided, in order to prevent the effusion of coagulable lymph, or formation of polypous concretions. Abundant and repeated abstractions of blood, general and local, together with calomel and opium, constitute the most important part of the treatment in the acute period of attack. Colchicum, digitalis, and counter-irritants by blisters and the pustulating liniment will be proper in the more advanced stage. When the disease becomes chronic, as it will by neglect or bad management, our chief reliance is on small bleedings, oft repeated, absolute rest during aggravation of symptoms, low diet, occasional gentle ptyalism, and counter-irritants, continued for months in succession.

Such are the means best calculated to arrest the process of disorganization in the interior of the heart, to moderate its action, and to prevent permanent enlargement. When organic lesions of the orifices and valves are once fully established, the most that can be done is to palliate. To effect a cure is an event hardly to be expected.

FOREIGN BODIES IN THE PHARYNX, LARYNX, TRACHEA, BRONCHI, FRONTAL SINUS, NOSE, EARS, &c.

Many of the casualties embraced under this caption are easily managed on the simplest mechanical principles. If a child seem to be in danger of suffocation or choking, by reason of a mass of food or anything else in the throat, we may often give immediate relief by a bold effort to push it down the œsophagus. Sometimes a coin or bone may be lodged in the pharynx so as to excite great uneasiness, and then it may be practicable, by means of a small sponge secured to a piece of whalebone, to get behind the foreign body and to draw it up, or so alter its position as to dislodge it entirely. I have known a piece of fish-bone to be forced into the pharynx and to project into the cavity, so as readily to be seen and extracted by means of a pair of long slender forceps. There is no great difficulty in cases of this kind.

When foreign bodies get into the larynx, as a bean or grain of corn, much more severe suffering and alarm will ensue than when the body is in the pharynx, and the management is decidedly more difficult. We may not be able to assure ourselves of the fact of swallowing or attempting to swallow the body named, nor that its lodgment is within the larynx. In all such cases the relaxing agency of emetics will often avail, and in the efforts to vomit, the foreign matter will be ejected. Should this expedient fail, it may be necessary to resort to a surgical operation.

But various articles very unexpectedly find entrance into the trachea, and even into its bifurcation, where they excite long-continued and intense suffering. If the suspicion be raised and entertained that a foreign substance has really been located there, emetics will be tried, very persistently, to dislodge it. But sometimes the body has entered so suddenly that it is not known that such is the state of the case. Irritation and inflammation ensue, and at last obvious suppuration is developed, and the patient is treated for pulmonary consumption. I have recorded several cases of the kind in the *Western Lancet*, in which, after all sorts of treatment for imaginary phthisis, the foreign body, as a leaden ball or other substance, was forcibly ejected in violent efforts at coughing, and forthwith the patient began to recover.

These facts are now referred to for the purpose of giving due caution to practitioners in respect of similar accidents, and to make them suspicious of all cases of supposed pulmonary disease in which a scrofulous diathesis is not palpable. Inquiries pushed into past history will often develop facts that may serve as a clue to direct our judgment in the case.

It is well to remember that worms in the frontal sinus may induce most distressing headache, which cannot be cured but by dislodging the cause. These worms may be taken in by carelessly snuffing at a leaf or a flower, in a garden or elsewhere. Children and adults, in this way, often deposit the germs of future worms in the frontal sinus. One of the most inveterate cases of headache I ever knew was induced by this agency. The daily snuffing at a bottle of spirits of turpentine finally succeeded in destroying the worms, which were expelled in a dead state. The volatile nature of the remedy gave it ready access to the cavity, and its anthelmintic powers were manifested very happily.

Foreign bodies often find a lodgment in the nose. Very young children sometimes amuse themselves by thrusting beans, grains of corn, peas, cherry-stones, and the like up the nostrils, and they give no uneasiness for a time, it may be. But, if they be vegetating substances, the moisture and heat of the parts not only cause tumefaction, but actual incipient growth; and stories are told of a cherry-stone shooting out roots in the nostrils.

We are forcibly taught by the facts of the case the necessity of a very early extraction of all bodies introduced, either by accident, or by unconscious playfulness, or by design. The slightest mechanical effort will very readily remove them before they become swollen so as to impact the cavity. But I have found it not so easy to succeed when a small bean had nearly trebled its size, and induced some irritation of the mucous membrane. I have always managed such cases by the careful introduction of a blunt silver probe, bent at one end so as to have a slight hook, by which the foreign body can be operated upon so as to change its position and effect its removal.

These cases are rendered much more embarrassing when not early attended to, by a disposition of the mucous membrane to deposit phosphate of lime on the foreign body. A case is related of a child who had forced a cherry-stone into the nostril when alone and unwatched, and which remained for the space of at least two years. The child had been subject to attacks of pain on the left side of the nose, attended with sneezing, coryza, mucous discharge, and ulcerations. The left nasal meatus was at length quite obstructed, and the lachrymal duct was compressed so as to force the tears on the check, inducing unpleasant excoriations. Many conjectures were raised in the case, and divers expedients tried. At last, by severe efforts in blowing the nose, something seemed to be moving, and, finally, a calculous concretion was expelled, which, on being cut in twain, proved to be a cherry-stone, on whose exterior the earthy matter had accumulated in layers of varied color. (See *Graefe's Journal*, 1829.)

Foreign bodies in the external ear are often the occasion of much disquiet, not to the child, it may be, so much as to the parents and friends. I once saw a case of the kind that came nigh to create a neighborhood uproar, and yet there was nothing like danger in the accident, nor even much pain attending it. A little crawling infant had made out to slip a large grain of corn into its ear, while its nurse was probably fidgeting before the looking-glass. After awhile, the intruder became a little offensive, and the instinctive use of the fingers to rectify the evil only made the matter worse. The corn was actually jammed so as to fill up the passage. The irritation augmented, and the parent was led to inspect the ear, when the evil was detected. In a very short time I succeeded in dislodging this offender, by the kind of instrument mentioned above. The finer the probe the better. It should be coated with sweet oil, and with a little force passed along side of the body and beyond it. The small blunt hook at the extremity can now be made to act efficiently, and in an instant we draw the mass away.

But young children and old persons may have insects to get into the ear, and the irritation consequent on such an accident is often severe. The whole affair can be very promptly and happily managed simply by placing the head on the lap with the affected side presenting upwards, and then pouring a little sweet oil into the ear. The insect finds itself in a wrong element, and is speedily dislodged. Its hold on the mucous membrane is at once detached, and it floats out with the oil, when the head is turned in the opposite direction.

These are all apparently very small and insignificant things; but every practitioner should be ready even for such emergencies, as they are likely to occur in every neighborhood. The medical quiver should always be full of arrows, large and small, and the physician prompt to select wisely for every occasion.

OF CHOREA.

This has been called Saint Vitus's dance, Saint John's dance, &c. &c. It is a disease of childhood, and often seen prior to the development of puberty. It has been generally regarded as a nervous affection, a disease of the brain and nervous system. This quality serves to account for its occasional epidemic development, as in seminaries, where a single case will involve all the pupils, by a kind of unexplained sympathy.

The *causes* involve various agencies, as age, sex, &c. That it is confined almost exclusively to females is usually admitted, and yet there are well attested cases of it in males. Very young school girls are apt to be its subjects, and those who are older do not always escape. That the refinements of city life exert a potent influence in respect to this disease, we have only to observe that chorea is very seldom seen among the vigorous females of the farm-house, where the diet, clothing and habits are in accordance with the dictates of nature.

In precocious girls, with all the developments of the sex in advance of the ordinary condition at twelve years of age, the disease is undoubtedly induced by ovarian irritation; and yet it may exist independently of uterine derangement of any kind. The disease comes very suddenly, in some instances, though it is more apt to be gradual in its manifestation. It is also said to be cured spontaneously, though very rarely.

The *pathology* is environed with obscurity, and has not been in any valuable degree elucidated by post-mortem examination. The lesions found are very variable, and therefore not reliable. Inasmuch as patients almost uniformly recover, the number of dissections has been very small.

Symptoms.—The most obvious are the frightful contortions of the face and of the entire body. These are greatly aggravated by the sight of strangers, and on the same principle the patient has most quietude at night. To a very great degree, the spasms are beyond the control of the will, and are often renewed without any visible agency. Dr. Todd names a peculiar symptom in the tongue, designated by him as pathognomonic. The patient thrusts the tongue out to the fullest limit, with a forcible motion, or by more than one effort. The retraction of it is quite gradual, and is as though it were pressed between the teeth. In some instances this peculiar protrusion is stated to be a precursor of the seizure; and Dr. T. affirms that he has correctly predicted an attack of chorea from seeing this state of the tongue. (See *Braithwaite*, 19.) I have never had an opportunity to notice this remarkable symptom, but it merits attention.

There is no disease for which chorea can be mistaken by a judicious, well-instructed physician, and therefore we need not make any specifications touching the diagnosis. The prognosis is always favorable, unless manifest and grave complications be blended in the case.

The duration of chorea is very variable. In this respect, something depends on original constitution and acquired predispositions, as well as on the early and proper treatment. It may continue for several years, and frequently persist for many months, although it sometimes yields in a few weeks. When long protracted, it may terminate in apoplexy, or epilepsy, or palsy.

The *treatment* has been quite variable. Active depletion is seldom resorted to, and can hardly be necessary, unless the patient is decidedly plethoric, or an inflammatory tendency is manifest. When there is obvious local determination, leeches or cups may be called for, and may be beneficial.

Rejecting bloodletting altogether, many physicians relied on active purgation. The Hamiltonian practice made this plan very popular, and it was, doubtless, often successful. In all cases of manifest derangement of the digestive apparatus, the use of cathartics was supposed to be imperative; and while these were occasionally combined with emetics, they were oftener given alone. In all those cases in which the irritation of worms exerted a bad influence, by aggravating the disease, calomel and aloes, pink-root and senna were frequently prescribed with the most salutary results.

The emetic treatment has also found strenuous advocates. Some practitioners of high distinction in the West cure chorea, very generally, by the use of this class of remedies. They vomit daily, and even two or three times a-day, and rely on this kind of medication. The same practice has been commended in Europe, and has been quite successful. A case is reported which had resisted valerian, oxide of zinc, purgatives, cold bathing, and frictions to the spine for about five years, and was finally cured by tartar emetic. For a week, five grains were administered daily, in some sort of drink. The first dose induced smart vomiting and copious diarrhœa; the others had no marked effect, excepting to create a loathing of food, and to arrest the chorea. On the fourth day, ten leeches were applied to the neck, to relieve a slight cerebral congestion. The cure was a permanent one.

The *tonic* plan has had many advocates, and is undoubtedly very successful. It consists in the use of the various preparations of iron, the bitter tonics, as quassia, gentian and sulphate of quinine, with the mineral acids, and especially the well-known elixir of vitriol, taken in water or in the infusion of quassia.

Cold bathing, the shower-bath, and occasionally a warm-bath will be found useful. Electricity, galvanism, and counter-irritants to the spine have been resorted to with various results. Carriage exercise is often very beneficial.

The *cimicifuga racemosa*, or black snakeroot, has been highly praised by the late Prof. Physick, Drs. Kirkbride, Young, &c. The powder of the root given in half teaspoonful doses to children five years old, has been decidedly efficient. It is also given in the form of infusion.

Dr. Ross and others have reported cases of chorea cured by the exhibition of strychnia, in the dose of a tenth of a grain to children twelve years old, given twice a-day. At the end of a week, the morbid symptoms were gone. (See *London Lancet* for September, 1845.)

Chorea is one of the many affections in which the powers of chloroform have been tested. A case is detailed in *Ranking's Abstract*, No. 8, of a patient aged seventeen, who, after the use of mineral tonics for ten days, was subjected to the chloroform for one week, the inhalation being made daily. The disease was completely removed.

In several instances I have ascertained, as the result of consultation with younger physicians, that the purging plan had been pushed too far. My advice was instantly to stop that practice, to direct a good but easily digestible diet, some of the preparations of iron, daily carriage exercise, and the shower-bath every day. Under this management, the disease has promptly yielded, and perfect recovery followed.

SINGULTUS, HICCOUGH, OR HICCUP.

This may occur at any period of life, and is often seen in infants, as the effect of over distension of the stomach. It consists of a convulsion of the diaphragm, and is caused by the agency of the motor filaments of the phrenic nerves. The distended state of the stomach prevents the full play of the diaphragm, and the nervous excitation leads to the convulsive actions. We see the same phenomena at the close of diseases in which there is large tympanitic distension, and this continuing, the hiccup persists to the last hour.

The *treatment* in infants calls for little attention. If vomiting come on spontaneously, and their overloaded stomachs be emptied, the symptom ceases. If the stomach be acid and flatulent, a few grains of calcined magnesia will suffice, or a teaspoonful of lime water, diluted with as much milk. In older children, the hiccup seems to be perpetuated by a kind of habit, even after free evacuation of the stomach and bowels. In such cases, a few drops of sulphuric ether, a drop of chloroform, or a full draught of warm water has succeeded. In other cases, a blister to the epigastrium has met the difficulty; and if that failed, a fourth, or a half grain of acetate of morphia, applied to the raw surface, has answered the end in view. The complete induction of unconsciousness, as in profound sleep, effected by any sort of narcotic medicine, will rarely fail.

ERETHISM OF THE BRAIN.

A FEW remarks on this interesting topic will not be out of place. The phraseology was first employed by Dr. Nichols, and was intended to indicate, as I suppose, pretty much what we mean by cerebral irritation. But, as the latter had long been in use, it is presumable something more was intended.

What are we to understand by this erethism of the brain? where do we find it? Very obviously, it has no pathological landmarks, since we have no certain data by which to determine, in the dead subject, the presence of this or any other form of mere irritation. I am very much inclined to the belief that this very thing to which Dr. Nichols has given a distinct and special importance is neither more nor less than the premonitory or forming state of arachnoid inflammation, or hydrocephalus internus. And as I cannot appeal to post-mortem examination, that being wholly incompetent on the score of evidence, I shall deduce my reasons from other quarters. In the first place, I advert to the statement of Dr. Nichols himself that the essence of *erethism* is a highly irritable condition of the nervous centre. 2d. That it is marked by wakefulness, irritability of temper, great sensibility to light, contraction of the pupil, frequent crying, starting in sleep, &c. 3d. From the treatment proposed, which consists partly in the application of leeches to the temples, lancing the gums, aperients, diuretics, and the warm bath.

Now, it is abundantly plain, from the few symptoms here presented, that the case is not that of a cross child exhibiting a peevish and fretful temper. There is actually some disturbance of function, some departure from healthy action somewhere. This notion of mere irritation giving rise to such a form of morbid phenomena is what I confess myself not quite able to comprehend; and I have been exceedingly dull at this business, for I tried some years ago to master it, and am no wiser yet. I am not at all disposed to find fault with Dr. Nichols for calling the attention of the profession to it, because I believe there may be good results from his effort. I am of opinion, however, that in very many cases, just such as he has described, hydrocephalus would infallibly show itself, if the proper remedies for removing the erethism or cerebral irritation were not carefully applied.

Dr. Nichols states that the causes of this irritation are dentition, gastric irritation, worms, &c. &c.; and who does not know that hydrocephalus owes its origin not unfrequently to these very causes?

OF HEADACHE.

HEADACHE has been defined to be *Pain in the head, with intolerance of sound, sometimes also of light, and incapability of mental exertion.* Too frequently, headache has been referred to disorders of those abdominal viscera with which the head readily sympathizes, even when it obviously depends on morbid conditions of some of the cranial contents. The young practitioner should bear in mind, however, that not unfrequently those very disorders so often regarded as the source of headache, by sympathy, are in fact the offspring indirectly of some cerebral affection. That secondary or sympathetic affections are often thus mistaken for the primary disease, is clear from an attentive examination of the facts, and from an inspection of the best authorities on the subject, and especially some of the late English writers.

That this troublesome malady is occasionally the result of more or less inflammation within the cranium is hardly to be doubted. Boerhaave believed that it had its origin not unfrequently in a chronic inflammation of the dura mater, and he made this inference from the fact that dissection revealed a more diseased condition of that membrane than of any other portion of the cranial contents. That it is not, however, always the result of inflammatory action is equally clear, since we are able to trace it in many cases to its proper causes, and these very remote from the character of inflammation.

Headache may and actually does affect persons of all ages and both sexes. Though not very common in children, they are undoubtedly not wholly exempt from its attacks. Females are supposed to be the most frequent subjects of this disease, and in them it was regarded by Dr. Rush as a symptom of gout, for that excellent physicajn held, contrary to the fashionable opinion, that there were ten gouty women for one gouty man. If that were the fact in his day, I see no reason why it may not be equally so now. Dr. Copland has divided headache into eleven species, viz., 1. The *nervous*, from depression or exhaustion. 2. The *congestive*, from impeded circulation in the brain or its membranes. 3. The *plethoric* and *inflammatory*, from general plethora, active determination of blood to the head, or inflammatory action. 4. The *dyspeptic* and *bilious*, from disorder of the stomach, liver or bowels. 5. The *cerebral*, from organic change within the cranium. 6. The *pericranial*, from disease of the pericranium, or bones of the cranium. 7. The *hemicranial*, or limited, confined to a part, or neuralgic. 8. The *rheumatic* and *arthritic*. 9. The *periodic*. 10. The *hypochondriacal*, and 11. The *sympathetic*, from disorder of the uterine and urinary organs.

Although there may be good reasons for going into so minute a subdivision of headache as the above, yet I do not deem it desirable to specify the symptoms of each variety, could I do so without encroaching upon other topics of greater importance. Nor is such a division in my judgment likely to assist the practitioner.

Headache sometimes occurs in regular paroxysms, with obvious remissions. Sometimes it wholly intermits, and in a few cases it takes on the continued form. The remote and exciting causes of headache act on the nerves, blood-vessels, mind, senses and stomach, and hence we might notice as many distinct forms or grades of headache. It may be induced by contusions of the head, also by falls, in which the feet strike the ground so as to impart a shock to the head; by mal-conformations of the brain, by abscesses in the ears and frontal sinuses. Of the latter kind, I knew a very interesting case. It was long protracted, and was ultimately cured by snuffing spirits of turpentine up the nostrils. This acted no doubt by counter-irritation. It may be induced by a worm or worms in the frontal sinuses. A case is recorded in the *Transactions of the College of Physicians and Surgeons of Philadelphia*, published in 1793, that occurred in the person of an old lady, and continued about eight months with great distress. A bloody discharge mixed with pus came on three weeks before the cause was revealed. A violent effort to get rid of some foreign body supposed to be the noxious agent effected the discharge of a worm two inches long, and thus terminated her sufferings. She supposed she might have snuffed the worm into the nostrils, when in the larva state, from some garden flower.

I knew a clergyman's wife, formerly of this city, who suffered long in consequence of a worm in the frontal sinus. The persistent inhalation of the vapors of spirit of turpentine finally dislodged the intruder, and the lady lost her headache. Medicated snuff, composed of a drachm of Turpith mineral and two ounces of common snuff, taken very feeely as an errhine, has accomplished the same result.

Headache may also be kept up by wearing tight bandages, tight ligatures, or anything calculated to obstruct the circulation. The removal of these has often given signal relief. I am well satisfied that many young persons suffer headache from this kind of agency.

Fevers of various kinds give rise to headache, which comes as a marked feature of the premonitory stage. Now and then attacks of epidemic disease are ushered in by headache, as the only precursor. It was often the only sign of an approaching seizure of yellow fever, in this city and elsewhere. But we also meet with headache frequently as the result of metastasis, and our curative indication is then very manifest.

Headache is sometimes an affection purely rheumatic or gouty, and is under the control of the remedies proper for those forms of morbid action.

In addition to the causes of headache already enumerated, I name decayed teeth. I have known several cases of long protracted headache effectually cured by the extraction of every stump and carious tooth. And I have recently heard of a most interesting case of partially restored vision, as well as removal of cephalic pains, by the same means. The cessation of the menstrual discharge is often a cause of headache, a recovery from which is often deferred until the constitution has been attuned, if the expression be admissible, to that important change. A sudden cure of hemorrhoidal discharges has been followed with troublesome headache, evidently by metastasis. Costiveness and habitually cold feet have often induced headache. Severe study, too much sleep, a fright, anger, intense joy, looking down from a great height, offensive odors, certain gases, indigestible food, overeating, fat meats, ardent spirits, wines, beer, &c., all may give rise to headache. Not unfrequently, the headache depends on a morbid condition of the stomach, and sometimes the stomach appears to be affected primarily by the condition of the head. Headache sometimes affects precisely one-half of the head, and is then called *hemicrania*. This form of the disease may be occasioned by some organic derangement or malformation, although that is by no means the fact in all cases.

Sometimes the pain of headache will be confined almost to a spot, directly over the right or the left eye. Its violence is occasionally very distressing, and it refuses to yield to any sort of remedies, whether external or internal. I have known this variety of headache to disappear entirely under the influence of sleep.

We may meet with this disease in almost every grade of pain; the dull, the heavy, acute, throbbing, deep-seated, and superficial. Now and then we find the scalp sore to the touch, and in other cases, nothing seems so soothing as a bandage drawn around the head as tight as it can be. Sometimes the disease makes its attack at sunrise, and subsides at sunset.

When headache depends on malformation, it is incurable by any means. When it proceeds from local causes, the remedies are bleeding, blistering, cupping, leeching, purging. A spontaneous hemorrhage from the nose, or a free hemorrhoidal discharge has given speedy relief in this disease. Blood-letting will often relieve and cure headache, even when no febrile symptoms are present. This remedy frequently gives relief before the arm can be tied up. In very severe cases, it may be necessary to practice arteriotomy. This bold practice was recommended by Gesner, more than two hundred years ago, and modern practice has justified the measure. Sometimes emetics afford prompt relief in this disease, and they should always be employed when the stomach gives indications of an unhealthy condition. Not unfrequently, abstinence from solid food for several days in succession will be the best prescription we can suggest. In very obstinate cases, resort should be had to gentle ptyalism, by means of blue mass, as not unfrequently there is more or less hepatic derangement.

Dr. Physick cured several long-protracted cases of headache by making crucial incisions through the scalp down to the bone. This practice was pursued long ago by Tissot.

When headache assumes a periodical form, the remedies proper for intermittents are demanded, and they almost uniformly succeed. In fact, intermittents are not unfrequently disguised by the symptoms of headache, as Senac has clearly taught in his excellent work on fevers, and in the chapter devoted to the consideration of masked, or disguised intermittents. I have treated such cases of headache precisely as I would an ordinary intermitting fever, viz., with arsenic, or sulphate of quinine. Some years ago, when Peruvian bark was in fashion, a combination of that article and valerian was highly extolled in this form of headache. But we will generally succeed with the sulphate of quinine. Sometimes, however, periodical headache is protracted for months, and the patient dies in spite of all the means employed. A very interesting case of this kind is recorded in the 42d vol. of the *Edinb. Med. and Surg. Journal*, page 260. During the paroxysms, leeching, purging, and low diet were employed with no favorable result. In the intervals, the sulphate of quinine was administered, aided by the shower bath, and some relief seemed to flow from this course, but the effect was only transient. Dissection showed a turgid and minutely injected state of the veins on the surface of the brain, a tumor in the cerebellum, and the ventricles filled with serum. The subject was six years old.

Cold and dry feet sometimes precede a paroxysm of headache that is purely nervous, and this variety is generally curable by the warm bath to the feet, and anodynes. After a painful fit of headache has subsided, a return has been prevented by a perpetual blister or seton to the nape of the neck. These act by depletion and counter-irritation.

Prognosis.—Headache is most dangerous when it arises from local injuries, mal-conformations, &c. It is not dangerous when it depends on disease of the stomach, and less so when it affects the brain through the mind, as by study. The more the pain is diffused over the head the less dangerous it is. When the disease is hereditary, it is seldom curable.

The following case, furnished by Dr. Law, an English physician, may serve to show how utterly ineffectual all remedies may be in the effort to cure long-continued headache. I do not cite it to discourage the application of any proper means in cases of this troublesome malady, but merely to state facts that may be useful in cases of great embarrassment.

The patient was a female forty-three years of age, and when admitted into the hospital, had distressing pains immediately over the orbits of the eyes. Her pulse was 100, tongue loaded with dark brown crust at the base and in the centre, red and glazed at the points and edges; stomach irritable and painful on pressure; no diarrhœa, a natural heat of skin, no depression of spirits. She had been treated for fever by a physician, and the same view was at first held by Dr. Law, who accordingly leeched the epigastrium, gave effervescing draughts, &c. These remedies were of no avail, and the conclusion at length was that the head was the seat of the disease.

Leeches were now applied to the temple where the pain was felt most severely, and these procured some relief. A blister was followed with similar effect, but the change was only transient. Calomel and James's powder were next administered, with a view to a constitutional impression. As soon as the mouth grew sore the headache entirely ceased, and the tongue became clean. But this exemption from suffering lasted no longer than the soreness of the gums. The sight of the left eye now failed, the pupil became permanently dilated, and complete amaurosis was established. Suddenly she was attacked with total insensibility, laborious breathing, and feeble pulse. The temporal artery was opened, but the pulse falling very fast, the bleeding was arrested.

The face became flushed, and the carotids pulsated violently, and death soon followed.

Dissection revealed a condition of the brain that made it manifest that a cure was impracticable by any means. The middle arteries of the brain were ossified. Six ounces of fluid were found at the base of the brain, and a large coagulum of blood occupied what had been the floor of the third ventricle, but which was entirely obliterated.

OF EARACHE.

We are next to notice that troublesome affection denominated *Earache*, or *Otalgia*. This affection has been defined violent pain, generally in one ear, suddenly supervening, and often abruptly departing, without fever. Very often it is a symptomatic disease, proceeding from inflammation of the ear, or from foreign bodies, as insects and the like, in the meatus; or from congestion or inflammation within the head. It may be caused by any considerable inflammation or swelling of the tonsils and fauces, or parotid gland. Sometimes it follows small-pox, scarlet fever, measles, and erysipelas. Occasionally it is an affection purely nervous, and then it is decidedly *idiopathic*. It may be seated in the nervous filaments sent to the internal parts of the ear, or in that part of the facial nerve which passes through the aqueduct of Fallopius, or in the filaments of the acoustic nerve, which seems the less probable seat. This disease is peculiar to some families, and affects several of the children of the same family. A child will retire to bed perfectly well, and awake with a violent fit of earache. This may be the result of exposure to sudden changes in the weather, neglect to cover the head with the accustomed cap, or something of that kind. Though these violent attacks are seldom of long continuance, they are often troublesome, and of frequent recurrence.

The *idiopathic* or true nervous *earache* is intensely painful from the commencement, and differs from a common inflammation of the ear, the pain of which augments gradually in severity. Nor is it, like the latter, accompanied with throbbing or inflammatory fever. The length of time a fit of earache may occupy is very uncertain. Sometimes it seems to be spasmodic, and to pass off in a short period. It is occasionally followed by neuralgic or rheumatic pains about the face or head, or some remote part of the body, and this latter distinguishes it still further from inflammation of the ear. It moreover frequently re-attacks the same ear, but very rarely goes to the other. The pain may be so severe as to make the eyes red and watery; but very rarely does it occasion delirium or convulsions, excepting when connected with inflammation of the internal ear, or caused by insects or other foreign bodies lodged in the meatus. If the affection proceeds from the latter cause, repeated and alarming convulsions sometimes supervene.

Earache is generally attended by noises in the ear, and sometimes by a slight deafness. This manifests an augmented sensibility of the parts that make up the ear, and at the same time an enfeebled power to perceive sounds, thus evincing that the acoustic nerves are not the seat of the exquisite pain that is felt. It is never constant in its course, and herein it resembles all nervous affections. It may be intermittent or continued. It may attack several times, after irregular intervals, or it may appear once and not return again. Children who have it very frequently gradually outgrow it, as it is said, and when come to years of maturity lose it altogether.

Earache may be occasioned by any of the causes that produce nervous affections, and these are very various. Females are more subject to it than males, and in them it is often found in the early periods of pregnancy. We have referred already to its symptomatic character, and it is proper here to say that disorders of the primæ viæ sometimes give rise to it. Sometimes it is connected with rheumatic disease of the face, head or neck, and it now and then attends facial neuralgia and toothache. Decayed teeth may excite it, as shown by M. Fauchard, who cured a patient of earache by extracting a carious molar tooth, after all other means had failed. Pettigrew mentions a similar case; the extraction of the wisdom tooth cured the earache. A current of cold air falling on the ear is a frequent cause, perhaps the most frequent.

The *treatment* of this affection is to be governed by its peculiar character. If it be symptomatic, the primary disease must be particularly attended to. If a foreign body cause the disease, let that be extracted as gently as possible, so as not to increase the existing irritation. The readiest way to dislodge insects, living or dead, is to inject a small quantity of olive or almond oil into the meatus; the insect will be taken up and carried out with the oil. Acrid injections, as of tobacco, are improper and needless.

When the disease attacks quite young children, the gums should be examined, and if very much inflamed and swollen, they should be scarified; if there be carious teeth, extract them.

In some cases of earache, there is more or less of inflammation in the meatus auditorius, and it may be necessary to apply a few leeches behind the ear, followed with a blister, and it may be proper to bleed from the arm. The latter may be the more needful, by the presence of fever. An active emetic is often very useful, especially if there be offensive matter in the stomach. After bleeding from the arm, an emetic almost always gives speedy relief. Sometimes it will be proper to give a dose of calomel, and to follow that with an active cathartic of senna and Epsom salts. Gentle diaphoretics are also highly proper.

It is a very old practice to apply, by means of cotton or by injections, warm oils, either alone or mixed with anodynes. This practice was particularly designed for nervous earache, but it has been extended to every variety. They may sometimes be useful; but, generally speaking, milk and water gently warmed is better. We may often afford great relief by sweating the head freely; this may be done by covering the head and upper part of the body, enclosing a vessel containing hot water.

When the disease resists all the usual means, and is quite protracted, we may reasonably dread an extension of the mischief to the brain and its membranes. If the pain extends and the eye wanders, we may calculate on the supervention of phrenitis, and must act accordingly.

OF DEAFNESS.

The limits we have prescribed for this sequel will not permit us to enter fully into this very interesting subject. It is too common to regard deafness as an appendage of middle age or advanced life, and to treat it as a slight affair in infancy, that may be outgrown. All this is wrong. We have no doubt that very many cases might be happily met, and the evil eradicated, by giving the earliest possible attention to it, within the first three years of life. So soon as it is well ascertained that a child is defective in the organ of hearing, it should claim investigation to determine the causes and to ascertain all the circumstances that may throw light on the subject.

The *causes* are various. It is possible for the defect to be inherited by transmission of a bad organism, and then it is incurable. It may grow out of syphilitic taint, derived from the parent, whereby the organ of hearing may be impaired, and deafness be congenital. Here, too, there is little hope from remedies. Very frequently it is the result of scarlet fever, measles, smallpox, and low fevers that greatly deteriorate the system. If these diseases induce abscess of the organ of hearing, the structure may be very much injured, or it may be destroyed, and then all remedies will be unavailing. But it may depend on general bad health, and then, as a matter of course, we may hope to cure or relieve. It may depend on greatly enlarged tonsils, and actually does occasionally. Sometimes there is a manifest lack of nervous energy in the system, and the organ of hearing may suffer as a consequence.

The *treatment* of deafness must be almost, perhaps quite, as various as the causes. For want of attention to the real causes, many empirical remedies are employed that can hardly fail to do harm. Especially is it true that all forms of electricity are employed, not only without benefit, but with positively bad results. It is, therefore, important to bear in mind that common and galvanic electricity can never be of service, if the organ has been greatly injured by abscess; nor in any case in which the system is unduly excited. If there be a manifest lack of nervous power, if the patient be debilitated and the organ be not structurally deranged, the application of a small galvanic machine may be beneficial. To decide these points calls for some judgment and experience; certainly far more than is ordinarily possessed by itinerant electricians, who traverse the country, professing to cure deafness of all grades.

It is at all times necessary to see that the digestive organs be rectified, if any error really exist, and to remove chronic disease of other organs, as of the liver and spleen, by a proper alterative course. If the patient be very feeble from any cause, let the first efforts be directed to that point, and by suitable medical advice, with corresponding diet and regimen, endeavor to remove a difficulty, the presence of which must operate badly on the local defect. Should it appear that the system is decidedly scrofulous, or that the parents labored under a like defect, we must not forget the importance of a suitable iodine treatment.

Now, let it be remembered that the earlier in life these directions are faithfully carried out, in actual practice, the greater is the probability of saving the child from deafness. Let it also be recollected that there is no such a thing as a *remedy for deafness* in the abstract; and that in order to cure or treat a case rationally, we must understand accurately all the circumstances, and apply our remedies to suit the particular case.

There are some remedies (so called) that may be regarded as more safe, comparatively, than many others. I allude to all sorts of counter-irritation, and to the new article called *glycerine*. This is now favorably spoken of in the *London Lancet*, and other journals, and owes its valuable qualities to its power of retaining moisture and so softening the wax of the ear, that frequently becomes very hard and augments the deafness. It is applied on soft wool, morning and evening, and continued for several weeks. In the use of this article, and the various counter-irritants, care should be had, also, to guard against all exciting causes, as exposures to wet and damp weather, to keep the bowels regular, and to avoid all known indigestible articles of food. Sea-bathing is frequently beneficial. The *elixirs* and *deaf-drops* are all pernicious.

TRISMUS NASCENTIUM.

THE frequency and fatality of this disease, especially in the Southern States, as well as the unsettled state of its pathology, make it an interesting topic. It is now known that infants frequently fall victims to it in northern latitudes, as well as in southern regions, and this helps us to settle the question of climatic agency. The seizure has been manifest within three days after birth, and very frequently before the tenth day. The suggestion has been made abroad that it is induced by the vitiated atmosphere of hospitals; but this cause has no obvious application in the private residences in rural districts, where it prevails, and ends fatally. Colles conjectured that the hospital air acted on the raw surface left by the separation of the cord, and inferred that the disease was really traumatic tetanus.

Dr. Clarke, master of the Hospital for Infants, in Dublin, has given his experience in reference to the nine-day fits of infants, or trismus nascentium. The disease was unusually fatal in 1782. The children were seized a few days after birth with convulsions, twisting of the upper extremities, contortions of the mouth and face. The mother's breasts were seized by the child with unnatural greediness, as was also the spoon when this was employed for feeding. The disease lasted from eight to forty hours, and death seemed to result from deep exhaustion. Diarrhœa was a constant attendant, and hastened the fatal issue. Very generally, the disease began with the falling off of the umbilical cord. Dr. C. adds that the disease was never cured, so far as he knew.

The inquiries raised by Dr. C. touching the causes of the disease led to the conclusion that it depended on foul air, neglect of cleanliness, and intemperance in the use of ardent spirits. These agencies, operating on the imperfectly healed umbilicus, may have been adequate causes, and, most probably, were the sources of the evil.

Dr. Sims, of Alabama, who wrote on this subject, in the *American Journal of Medical Sciences*, seems to think that the disease depends on a peculiar position of the head of the new-born infant, by virtue of which undue pressure is made on part of the brain. He affirms that a change of position has instantly arrested the disease; and thinks that all the cases of cure on record were due to this change of position accidentally made, and not to remedies exhibited.

Dr. Eberle (son of the late Professor), who reports four cases in the *Western Lancet*, one or two of which did well, appears to think that the disease was induced by some sort of accident to the umbilical cord. I have no doubt that this conjecture is in part true, and that the opinion of Dr. Sims is entitled to consideration.

The *post-mortem* examinations made by Dr. Sims showed the superficial vessels of the brain filled with dark blood, especially those on the posterior aspect. In the spinal canal, coagula of blood were found in its entire length, perfectly enveloping the cord. The spinal veins were greatly engorged. These developments convinced Dr. S. that the essential pathological condition in this disease is first congestion, and then rupture of the spinal veins.

The *symptoms* usually show themselves within eight days after the birth. In what is called the acute variety, there are severe spasms of the temporal and masseter muscles, foaming at the mouth, closure of the jaws, inability to suck, and strong contractions of the flexor muscles of the thumbs. The face, and sometimes the whole body is swollen, and of a dark-brown or purplish color. The respiration soon becomes hurried, and the patient is exhausted with the muscular spasms, and with pneumonia, resulting from obstructed pulmonary circulation. The bowels are always constipated, according to some writers.

The *treatment* laid down by Sims is to do nothing, excepting to change the position of the head. The cases successfully managed by Dr. Eberle were treated with small doses of calomel to act on the bowels, and a blister over the umbilicus, which was kept running by the use of irritant ointments. It strikes me very forcibly that this practice, aided by warm bathing and an occasional emetic, with counter-irritants to the spine, will make up the entire inventory of rational practice in such cases.

CONGENITAL HYDROCELE.

This disease is now and then presented for medical advice. The sooner it is properly met and cured the better, and therefore the means should be applied as soon as the nature of the case is ascertained. Of the causes of the errors and malformations that present themselves at birth, we know nothing, though they may be regarded as mere freaks of nature, whose origin is wisely hidden from us.

The *treatment* consists, perhaps exclusively, in external appliances to the scrotum, such as warm brandy, or alcohol, or vinegar. Cloths are soaked in these liquids as hot as can be borne, and kept constantly applied. The vinegar of squill has been found an excellent application in the same way, and is reported to have removed the watery collection in a single week. Warm water alone, persevered in, has also been a successful application.

Should the child be costive, and in good health in other respects, the local means may be aided by the exhibition of a few grains of cremor tartar and jalap daily, so as to induce copious watery stools; or the mother may take the medicine pretty freely, until the child feel the effect of the remedy.

The persistent use of these simple expedients within the first four weeks from the time of birth will seldom fail to dissipate the hydrocele and set up such an action within the sac as to prevent a recurrence of the swelling.

IMPERFORATE ANUS.

This congenital defect is fortunately not of frequent occurrence, and, like other errors detected in the new-born infant, not to be accounted for. The defect is not always of the same nature precisely as to its anatomical character, as there may be a merely membranous obstruction, a more thickened barrier made of cellular tissue and skin, or there may be no rectum within two or three inches of the verge of the anus. Possibly there may be no actual obliteration, but an exceedingly contracted state of the parts, amounting in fact to imperforation.

The *treatment* must be varied, from necessity. When the last named condition presents, we have a passage too small to answer the ends in view, and our task consists in attempting to dilate. This is best accomplished by the introduction of bougies, small at first, and then of greater and still greater size, so as to insure the gradual widening of the canal.

When the external aperture is closed by a membrane stretched across, our finger may assure us of the state of the case, and guide us in making an opening by means of a scalpel. When the texture is much more thickened and resisting, we must be governed by our knowledge of the anatomy of the parts, and operate in conformity.

In all cases, after any sort of operation, it is absolutely needful to make sure of the artificial opening so formed, by the introduction of dossils of soft lint, or pieces of sponge tent, or any other contrivance that may meet the exigency. These must be changed daily, and repeated until the passage is permanently enlarged.

IMPERFORATE VAGINA.

This is another congenital defect requiring attention. And it is the more embarrassing to the subject of it from the fact that it is rarely discovered until the female is about to menstruate, and then her modesty recoils from an inspection. In not a few instances this native feeling has prevented a resort to advice, until the party was on the eve of matrimony, and then it was found to be absolutely indispensable to have the counsel of a medical friend.

This defect, as has been stated, is congenital; and yet it may result from inflammation of the parts and neglect to manage it properly. As an effect of the inflammatory process, coagulable lymph may be effused, and the lesser labia may be firmly conjoined as a consequence. It rarely happens that the escape of the urine is at all obstructed, and the closure of the vagina is overlooked until accidentally discovered. The *treatment* is very simple, and requires but a moment. If the membranous structure be very thin, it may be torn by a probe; but if it be pretty dense and resisting, it must be cut with a scalpel, or lancet, or sharp bistoury carried along the groove of a silver director. If the operation be performed on a girl who has become swollen by accumulation of the menses, a gush of menstrual blood will instantly follow the use of the cutting instrument, and insure the continuance of the opening. In younger girls, it will be well to pass some soft lint coated with cerate between the cut edges, and to renew this dressing after every evacuation of the bladder, until cicatrization has been completed.

A case was published not long since of a lady who actually made the incipient movements towards separation from her husband on the ground of his impotency. He protested that the fault was on her side, and yet she had regularly menstruated, though with more than the usual amount of pain. On a careful inspection, it turned out that the lady had an imperforate vagina to such an extent as to prevent intercourse, although there was an aperture large enough to permit the escape of the menses. She was operated upon with so much success that before the year expired she presented her husband with a fine boy. The difficulty would not have occurred if the proper examination had been made in early infancy.

NÆVI MATERNI.

These congenital or birth marks may occur in any part of the infantile frame. They are not often objects of alarm or consultation, unless exposed to the view, as when they are located on the face, or neck, or arms, or hands. In some instances, these marks are so faint at birth as not then to be perceived; and the false delicacy of the mother hides them from the gaze even of the physician, until their magnitude creates uneasiness. A case of this kind came under my notice many years ago in the person of a little girl, who had the largest nævus I have ever seen, and was subjected to a painful surgical operation to get rid of it. It was located on the abdomen.

Frequently we notice quite small lumps or elevations on the scalp or forehead or cheek, supposed to resemble a strawberry or raspberry, and traced, as, the ladies think, very naturally, to a peculiar longing of the mother when pregnant. These tumors have often a very perceptible pulsatory motion, and are so liberally supplied with vessels that quacks who have had the hardihood to "lance" them to let out the stagnant blood have induced a fatal hemorrhage thereby.

These marks have been called aneurisms by anastomoses, a term significantly enough teaching their high vascularity. The more common name now in use is the one with which this item is headed.

The *treatment* has been exceedingly diverse. When I was in the term of my pupilage, it was the practice of the best surgeons to make the radical cure by excision. Such was the plan of the late Professors Physick and Dorsey, and it was quite successful, though very painful. Other surgeons, as Professor Dudley, have preferred to obliterate these nævi by continued and firm pressure, and there can be no doubt that this method will succeed perfectly. Others have preferred to pass a needle through the tumor, armed with silk or thread containing some solution of caustic potash, or some other irritant. The silk or thread being allowed to remain, set up high irritation, and effected the complete dispersion of the mass. The simple operation of vaccination, puncturing the nævus at several points, has also been effectual. Repeated touches with lunar caustic, croton oil, creosote and the like, are reported as having fully met the case, and very promptly too.

HARE-LIP.

THIS deformity may be the result of an accident in childhood, or at a later period. It is most frequently, however, a congenital defect, and seen at the moment of birth. It may be a single or a double hare-lip; that is, there may be one or two fissures in the lip. The fissure may be confined to the upper lip (I never saw it in the lower lip), or it may extend far back into the nares.

It is a little remarkable that hare-lip is very seldom found in the colored race. Why it is so cannot be explained, and yet such is the fact. The inquiry was put forth some years ago, in a Western medical journal, "Are the negroes subject to hare-lip?" Forthwith, some of those sensitive ones who spy out the great vexed question where nobody else could find it with a microscope of a hundredfold magnifying power, guessed that the query was a left hand hit at the abolitionists, and they responded accordingly in an angry tone. But spite and spleen never settled a mooted point yet; and after waiting more than a year, it was not possible to gather more than ten cases in all this vast country of real hare-lip in the negro. I have lived in two slave States for more than twelve years; and although seeing more blacks than whites, or quite as many, I have never yet found a case of negro hare-lip. In the same regions, the most horrid deformities that ever met my eye were in the persons of whites, and the cases were not few nor far between.

The importance of correcting this evil in early life cannot be too strongly enforced on the community. The earlier in infancy the operation is performed the better; it cannot be done too soon. When a student, I attended in a family in Southwark under direction of my preceptor; the father of which and three or four children had hare-lip. After considerable effort, the father was prevailed upon to submit to the usual operation, and was not only cured himself, but his children born subsequently escaped the imperfection.

So simple is the operation on an unresisting infant, that it may be put to the breast as soon as the task is completed, and the comparatively defective sensibility prevents the realization of suffering, in a protracted form, such as is generally seen in subjects who have reached their fifth or sixth year.

The *treatment* consists in cutting off the edges of the fissure so as that when brought in contact, there will be an obliteration of the opening; and in order to keep the edges thus, silver pins, called hare-lip pins, are passed through the texture and secured by a ligature wound around the extremities of the pins, and keeping them firmly in place. The lip, before sundered in twain, is now made one; coagulable lymph is thrown out, making a bond of union between the cut edges, and in a few days the union is complete. It is always necessary to guard the hands of the patient so as to prevent even an involuntary application of the finger to the lip. This is especially important during the time of sleep.

The cases of double fissure must be treated on the same general principle. Fortunately, these are very rare.

CLUB-FOOT AND OTHER DISTORTIONS.

The judicious remarks of Dr. Coley on club-foot and other distortions, and also on strabismus, render it unnecessary for me to prepare anything specially touching those subjects. I copy from his work on the diseases of children:—

"These deformities are sometimes congenital, at others they originate during infancy or childhood. They were formerly supposed to be occasioned by the absence of some portion of the distorted articulations. Modern researches have, however, proved that they are produced by a loss of balance between antagonistic muscles, arising from spasm or paralysis. The congenital cases have been popularly attributed to some alarm or aversion in the mother during gestation. The manner in which this effect is produced, through the mother, on the excito-motory system of the infant is mysterious. If it is the result of sympathy, it must follow that there is some kind of nervous as well as vascular communication between the mother and fœtus, which has never yet been demonstrated. In some instances, I have found the defect to be hereditary. Nevertheless, it is difficult to explain how the reflex action of the motor nerves is excited during the intra-uterine existence of the fœtus. After birth, we sometimes find the motor nerves acted upon centrically, at others eccentrically. It is of importance to distinguish these opposite causes, as the centric diseases are incurable, and the eccentric, which depend on some cause affecting the excitor nerves, generally admit of cure. Hence, those distortions, which are the result of epilepsy in infants, found in the hands as well as the feet, are incurable; while those proceeding from intestinal irritation, and accompanied with temporary defect of nutrition, as when some part of the organic system of nerves is affected, are curable. The latter diseases are apt to occur after the measles, scarlet fever, or other exanthemata. In such cases, the paralysis and innutrition of one set of muscles permit the antagonist muscles to distort the limb. This disease is generally confined to the lower extremities in children. The affected muscles are obviously reduced in bulk, while their antagonists, acquiring strength and growth with the rest of the body, turn the leg and foot inwards, and render the patient lame and awkward in his gait. There are three species of club-foot—talipes equinus, talipes varus, and talipes vulgus. The first consists of such a contraction of the heel as renders the patient unable to walk except on the toes; in the second the toes are turned inwards, and the patient walks, as it were, on his outer ankle; in the third the foot is distorted in the opposite direction, so that the sole of the foot is turned completely outwards and a little backwards, and the patient treads entirely on the inside of the instep and on the inner ankle. Analogous distortion in the hands are met with after convulsions in infants, in which cases the strong flexor tendons, which are generally the seat of the contraction, distort the hands in a manner which, if not interfered with, remains through life.

"*Treatment.*—The tedious process formerly adopted, consisting of splints, &c., for the cure of club-foot and other muscular contractions, are now exploded, and the more speedy and eligible operations introduced by Stromyer substituted in its stead. These consist of the subcutaneous division of the contracted tendons and their gradual extension after re-union by means of a foot-board constructed for the purpose. The only operation mostly required for the cure of talipes equinus and varus is the division of the tendo-Achillis, which may be effected in the following manner:—A sharp-pointed, fine knife, with a straight cutting surface, of the length of one inch, and a handle five inches long, should be in readiness. The child being then seated, an assistant should support the knee, while another person drawing downwards the heel with his left hand, and pressing upwards the toes and front of the foot with his right hand, produces the requisite tension of the tendon about to be divided. The patient being thus prepared,

"'The operator, after feeling the outline of the tendon with the left fore-finger and thumb, passes the bistoury through the skin, one or two fingers' breadth above the malleolus internus, with one of its sides turned towards the tendon, and the other directed towards the deeper muscles and the tibial vessels and nerves. On being satisfied that the point of the knife has been passed beyond the external edge of the tendon, and has nearly reached the skin on the opposite side, the knife is turned so as to bring the cutting edge to press against the anterior surface of the tendon, which is then divided by the action of withdrawing the knife from the limb, and commonly by a single stroke; the complete division of the tendon is known by the immediate cessation of the tense resistance, by hearing a distinct snap, and by feeling before the knife is wholly withdrawn that nothing remains undivided except the flaccid integuments. The operation does not occupy a quarter of a minute, and is almost bloodless, as usually not more than a single drop of blood is effused.'*

"'The division of the tendon of the posterior tibial muscle is, in my opinion, best accomplished at the distance of two or three fingers' breadth above and behind the internal malleolus. The point of a strong and straight bistoury should be introduced through the skin at the outer edge of the tendon, and passed between it and the tendon of the long flexor of the great toe, directed towards the tibia. As soon as the knife reaches the bone, the handle should be depressed outwardly, and the point carried internally beneath the posterior tibial tendon, and continued onwards until the surgeon is satisfied that the point has passed beyond the inner edge of the tendon. He may then feel that he has the tendon upon the edge of the knife, when by a few slight cutting motions he may divide it without difficulty. No snapping sound, similar to that which follows the division of the tendo-Achillis, is heard when the section of the posterior tibial tendon is accomplished, as the fleshy fibres of this muscle take their origin so low towards the malleolus internus that they prevent the occurrence of any considerable retraction of the superior end of the tendon.'*

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* "Treatise on Club-foot," &c., by W. J. Little, M. D., p. 30.

"The division of the posterior tibial and the tibialis anticus and flexor longus pollicis muscles is not required, except in very bad cases of long standing. When the operation on the two latter muscles is required, the following is the plan recommended by Dr. Little:—

"'The most favorable situations for dividing the tendons of the tibialis anticus and flexor longus pollicis muscles are where the former passes in front of the ankle-joint, and where the latter is felt most prominently in the sole of the foot, in those cases where division is required. The manner of dividing each of these tendons is to pass the point of a bistoury through the integuments, and then, with great care, beneath the tendon, avoiding to carry the knife further than is absolutely necessary, and dividing the tendon from within outwards, in order not to endanger any of the neighboring structures. The recoil of these muscles, on their tendons being divided, is distinctly felt and heard. If they be thus cautiously divided, no risk is incurred of injuring the anterior tibial, posterior tibial, and internal plantar arteries, or any of the nerves. The wounds made in the integuments are extremely small, and unite by adhesion; consequently all chance of suppuration and sloughing is avoided.'†

"The tendons requiring division, in cases of talipes valgus, are those of the peronei muscles, and sometimes also of the tendo-Achillis.

"After these operations, no further dressing will be required besides adhesive plaster; and the limb should be laid on its outside upon a pasteboard splint previously adapted to it, so as to preserve its deformed position during three days, at which time the ends of the divided tendons will have become re-united by the effusion of lymph. The splint being now removed, the extremity must be placed in Stromyer's apparatus, and exposed to gradual extension, which may be completed in the course of three or four weeks. The apparatus must be occasionally employed for some time afterwards.

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* Little, p. 31.

† Ibid.

"Children should not be exposed to this treatment until they are twelve or fourteen months old, and able to bear restraint and confinement; but in cases of T. varus, very early means should be used to reduce the disease to that of T. equinus. The plan pursued for this purpose with infants under six months is the following:—

"'It consists of the application of a smooth and narrow roller-bandage around the foot and leg, from the extremity of the toes to the knee, interposing along the inner margin and sole of the foot and posterior and internal part of the leg a quantity of cotton wadding, to protect those parts from pressure; the limb should then be firmly and evenly bandaged in a tin splint, somewhat differently constructed to those usually employed, the entire attention of the surgeon being first directed to the removal of the inward tendency of the toes, and the reduction of the T. varus to the condition of T. equinus. The limb, when properly secured in this splint, is exposed to pressure in the direction the toes would maintain, if held outwards with the hands in the position of T. equinus, the inside of the metatarso-phalangeal articulation of the great toe and inside of the superior extremity of the tibia being the fixed points towards which the bandage presses the ankle and tarsus, tending to overcome the unnatural curve presented by the deformed foot.

"'Much care is requisite in the application of the splint, as pressure in an improper direction might at this early period of the development of the tissues of the foot produce a permanent displacement or flattening of the bones of the tarsus.

"'The back of the splint should be applied to the posterior part of the leg and foot, and the raised part should extend along the inside of the leg and inner margin of the foot. Should the splint have slipped around the leg, it must be immediately re-applied. The whole apparatus should also be removed on every occasion that the bandages become soiled by the infant, and immediately re-applied; for if the foot were permitted to remain a few hours without the restraint of the splint, more progress would during that period be lost than had been gained during its application for treble the length of time.'*

"Those cases of paralysis which proceed from compression on one of the nervous centres are, as I have said before, incurable. Those which occur during dentition or remittent fever, or follow the exanthemata, will generally give way to early and proper medical treatment. Such cases are connected with a torpid state of the bowels, which is apt to occur from the relatively increased circulation and excitement of the nervous system, which prevail in the alveolar membranes and skin during the development of the first set of teeth, and of remittent and eruptive fevers. By promoting the peristaltic action and the natural secretions of the intestinal canal, the healthy functions of the excito-motory nerves are restored, and the paralysis, when the ganglionic system is unaffected, ultimately disappears. These objects are best accomplished by purgative doses of chloride of mercury and jalap, repeated every third morning, and by strychnine, which should be commenced with the dose of one-twentieth of a grain for a child about four or five years old two or three times a-day. When the paralytic muscles are in a state of atrophy and the superincumbent skin deprived of proper temperature, the remedies should be such as are calculated to act upon the sympathetic ganglia. For this purpose some of the preparations of steel are the best, particularly the oxide. In obstinate cases, and those of long standing, it may be found necessary to divide the tendo-Achillis and apply the foot-board.

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* Little, p. 176 and 177.

"For further information respecting the mechanical treatment of club-foot, and the different operations for it, which may be performed at any age after twelve or fourteen months, the reader is referred to the valuable treatise on the subject before referred to, published by Dr. Little."*

STRABISMUS, OR SQUINTING.

"SQUINTING may occur in infants from the habitual and careless exposure of one eye to strong light; or from the eyes being attracted by a mark on the nose; or the border of a cap projecting too far over the face; or from unequal sensibility of the eyes; from partial opacity of the cornea or lens; or obliquity of the pupil; by external injury; by intestinal or cerebral irritation or disease; and by excluding one or both eyes from light during inflammation.

"*Treatment.*—When squinting arises from the unequal exposure of the eyes to the light, the one which has been most exposed should be covered for a time, which will have the effect of accustoming the idle eye exclusively to the influence of the rays of light, and generally rectify the mischief. Those cases which depend on centric or eccentric causes operating on the excito-motory system of nerves must be treated according to the nature of the disease. When the brain is the nervous centre originating the undue action of the muscles of the eye, our attention must be directed to the former organ. When the disease originates in inflammation in the dental capsules, or gums, or intestinal irritation, the former should be relieved by lancing, and the latter removed by appropriate internal remedies.

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* And also to the work of Tamplin on Deformities, republished in Philadelphia, by Barrington & Haswell.

"No trouble should be spared to remedy this defect during infancy by the employment of different plans and contrivances, which may have the effect of educating the weaker muscles, and thus overcoming the inordinate action of their antagonists. When this cannot be effected, or has been too long neglected, the muscles which have remained in continual contraction become shortened, and can only be restrained at a proper age by a surgical operation, for the performance of which various modes have been lately adopted.

"The plan practiced by Mr. Liston is this:—The lower eyelid being everted, the upper one held by a speculum, and the eye pulled outwards by a double hook, the conjunctiva must be cut across, and the sclerotica exposed. Then, after a little dissection, the internal rectus is seen, and its muscular part cut through with scissors close to its insertion in the sclerotica.* This operation is intended to remove the squinting which proceeds from the traction of the cornea inwards towards the nose. For the cure of the opposite deformity, the external rectus must be divided by a similar operation.

"A more simple proceeding is adopted by Velpeau, which will be found detailed in one of the numbers of the *Provincial Medical and Surgical Journal.*

"Slight cases are cured by Dieffenbach by excising a portion of the opposite part of the conjunctiva, or by cauterizing it, and afterwards applying cold water.

"After the operation, Mr. Liston insists on the other eye being bound up so as to exclude light, during twenty-four or forty-eight hours, for the purpose of insuring success; and the eyes should be defended from the light by shades, when the patient walks out, for some time after the operation.

"For a further detail of the various operations which have been performed for the cure of squinting, the reader is referred to the *Medical Retrospect*, by Mr. Braithwaite, vol. ii. p. 350, and vol. iii. p. 88; and the *Edinburgh Medical and Surgical Journal* for April, 1841, p. 370."

I may add to the above remarks of Coley, that a very simple contrivance, resorted to in early infancy, and persisted in for a long while, has completely cured the squinting propensity. It consists in placing a patch of black court plaster on the cheek, so as to court the eye of the child and attract it from its erratic tendency. Suppose the right eye has a cast towards the left, that gives it a real squint; let the plaster be placed on the prominence of the right cheek bone, so as to be seen the first time the right eye turns that way. The foreign body by its color will invite the eye so repeatedly as at last to give it a natural direction. This device will frequently be successful.

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* British and Foreign Med. Review, No. 19, p. 288.

PARONYCHIA, WHITLOW, FELON.

THIS affection, as we most usually see it, is too simple to allow us to introduce anything here that would tend to confuse it in the mind of the young practitioner. It is a very painful seizure of a finger or thumb, superficial or deep-seated, confined to its original seat, or extending to the palm of the hand and even to the wrist. The severity of the pain is remarkably disproportioned to the danger, for no one dies of paronychia, although he may suffer intensely, and generally does.

Symptoms.—At first there may be a very slight pain in any part of the finger, which, if neglected, may augment rapidly, inducing swelling, redness, and heat, with constant throbbing. The inflammation may be in the theca of the tendons, or in the periosteum, and it may end in suppuration, the pus being confined, and the bone itself becoming carious; or the pus may travel under the tendinous sheath to the palm of the hand and wrist, and find vent there, or require an artificial opening. Sometimes the local irritation is so severe as to set up fever, with all its usual concomitants.

Causes.—These are various. A blow, a bruise, or accident of any kind, may lay the foundation for this painful affection, and we may be unable to trace it to any cause. There seems to be a predisposition in some persons to have this accident in their persons repeatedly, no matter how careful to avoid local injuries. There can be no doubt that any of the ordinary causes of inflammation may be efficient in establishing this local malady.

The Treatment.—I know of no disease of such limited extent that has elicited such opposite treatment. When I was a pupil, it was the custom to cut down to the bone by a bold use of the scalpel, whether suppuration had taken place or no. The parts being highly inflamed, red, swollen, it was believed that the mere depletion resulting from a clean cut would promptly end the affair, and this expectation was often realized. It was also argued that if pus had been formed and lodged next to the bone, the deep incision would give it vent, relieve all the painful symptoms, and save the bony structure. The more prudent waited until they thought they could determine the fact that pus had been formed, and then the knife was resorted to. There can be no doubt that the early use of the scalpel has saved the bone from caries, and prevented amputation of the finger, rendered necessary by the obstinate refusal to have an opening made in due season.

In the south-west, a distinguished surgeon devoted to the curative powers of the bandage, has long been in the habit of treating paronychia by this remedy. Applied before the formation of pus, it may be efficacious by forcing the blood from the part and preventing subsequent accumulation. The application of the bandage gives severe pain, but subsequently the patient is much more comfortable.

There are two modes of treatment which, though exceedingly simple, are in my judgment entitled to notice. The one I have advised very frequently, and have employed it in my own person. It consists simply in the immersion of the finger in water nearly boiling. The finger is to be dipped twenty or thirty times, being kept in but an instant at each immersion. This may be repeated three times a-day or oftener, and if resorted to very early, it will scarcely ever fail. It acts on the principle of counter-irritation, by inducing a new and more healthful action of the internal vessels, and by allaying nervous irritation.

The other plan of treatment consists in the early inunction of the finger with the strongest mercurial ointment, employing smart friction at the same time. The operation is repeated twice a-day, and is said to succeed admirably. It was introduced to notice by an English surgeon, who first employed it on shipboard.

In those extensive cases in which the pus finds its way to the wrist, the constitutional derangement is very great, and the system must be sustained by tonics and a good diet. The natural apertures are never sufficient, and the knife should be employed to insure the escape of the accumulated matter.

In addition to the treatment named above, some physicians leech the part freely, and then apply a fly-blister, and dress the raw skin with fly ointment. This practice has undoubtedly succeeded. If the patient be scrofulous, the iodine ointment will answer a better purpose. It is highly irritant, and tends to correct the peculiar taint of the system. The ointment should contain, at least, a drachm of iodine to an ounce of lard or cerate. Very recently, I arrested this disease by rubbing lunar caustic on the moistened finger.

BURNS AND SCALDS.

THESE differ very much as to consequences and mode of treatment, as they are extensive or very limited. A small, deep-seated burn offers, it may be, no serious violence to the system, while a burn or scald that affects a large surface, though very superficial, may kill mainly by the shock inflicted on the whole economy.

A burn or scald, whatever be its extent, puts a stop at once to the healthful actions of the part, and tends, by sympathetic influence, to derange the functions of distant organs. It is easy to understand, in this view of the case, why a very large burn should be more deleterious than a very small one however deep-seated.

The destruction of the skin by a burn or scald exposes a tender and exquisitely delicate surface to the irritant action of the air, and hence the peculiarly distressing sensations of the patient. That this is the secret of the suffering is manifest from the effects of our best remedies, which act mainly by protecting the raw surface from the action of the air and other external irritants.

The *treatment* best suited to a large burn or scald is that which is in itself least calculated to irritate a sound skin. Hence we have no remedy so admirably suited to the case as wheat flour, applied so as entirely to coat every portion of the burnt surface. In can be laid on by means of a common dredger, or in any other convenient manner; and care should be taken to see that every spot is covered. This dressing need not be disturbed, but should be allowed to separate spontaneously. It guards completely against the external air, and absorbs matter as fast as it is formed, and so prevents its irritant action.

This flour practice is, probably, much more ancient than we suppose. Very likely it was in use in the earliest periods in the history of wheat flour; but of that fact we have no certain proof. As early as 1828, it was highly commended by an English surgeon, and has since been employed very frequently in this country.

Very fine carded cotton has also been employed in extensive burns on the same principle, and with happy results. It is not, perhaps, equal in all respects to the dressing with flour. Mucilage of gum Arabic and collodion have also been spoken of favorably. The latter merits attention.

Adhesive plaster, spread on fine linen or soft sheepskin, has also been placed over the entire surface of large burns, and allowed to remain until the healing process was completed. This effectually secured the tender skin from the action of the air.

Burns and scalds of less dimensions are often well managed with turpentine dressings, or the Kentish ointment, composed of basilicon ointment and turpentine. The lime liniment is a very pleasant and salutary application. It is made of lime water and sweet or linseed oil, blended so as to form a kind of soapy mixture.

When these accidents assail one or more fingers, or the eye, I know of nothing more efficacious than ice-cold water, alone, or medicated with sugar of lead. Here I am able to speak from my own personal experience, having been pretty sorely burnt on the hands with phosphorus, and having had an eye burnt by a chemical mixture while in the act of preparing chlorine gas. As promptly as was practicable, my hand was placed in the ice-cold water, and this latter was frequently renewed. After some hours of trial, all sense of pain was gone, and there was little trace of the accident.

The injury to the eye named above occurred a few minutes before the close of a lecture. The fracture of the retort containing the materials caused a splash of the heated contents against my eye. As soon as I could, on reaching my residence, I applied the ice-cold water, containing some sugar of lead, and renewed the application until after the usual hour of retiring to bed. I fell asleep, being of course very much relieved, and in the morning was so much myself again that my lecture hour was filled as though the accident had not occurred.

The iced water would be hazardous to a very extensive burn, and should never be resorted to. The sympathy between a great surface, exquisitely sensitive, and the internal organs should warn every practitioner against the use of a remedy that might give to that sympathy a fatal influence.

When the hands are badly scalded, it is of the utmost importance to fix the fingers in such a position as to render adhesions and permanent flexure impossible. To secure these ends, let the whole burnt or scalded surface be thoroughly dressed with flour or cotton, or lime liniment, or whatever may be deemed the best application; taking care to cover each finger distinctly with lint or a soft rag, and to spread the hand out on a splint and confine it there with a bandage. To do this will demand firmness and perseverance; but the physician must do his duty, or bear the blame of all the deformity that may ensue.

The constitutional symptoms that may supervene in cases of this kind are very various, and will require measures adapted to each particular case. It is possible for a burn or scald to induce high febrile excitement, and then depleting measures, especially emetics, cathartics and diaphoretics will be demanded. The sudden shock of a large burn may induce something like a state of collapse, requiring the internal administration of some of the diffusible stimulants.

FURUNCULUS, OR BOIL.

This is often a very troublesome and uncomfortable companion, the declaration ascribed to an old lady, that every boil in the spring was worth ten pounds, to the contrary notwithstanding. This estimate was grounded doubtless on the humoral pathology, and meant to set forth the efficacy of boils to rid the system of bad humors.

Boils commence with slight pain and tenderness below the surface, the inflammation spreads to the skin and causes redness and induration. The tumefaction soon augments, and it is attended with severe burning heat and throbbing. The color of the integuments assumes a dark purple hue, the tumor manifests a tendency to point, and an obscure fluctuation may be detected in the centre of the induration. By and by, vesication and ulceration show themselves on the most prominent part, and as the ulceration proceeds, the cellular and adipose matters escape in the shape of slough. Soon after the inflammation, hardening and thickening subside, and healthy granulations fill the cavity.

Any part of the body almost may be the seat of boils, and the pain will often depend on the location as to its intensity. When in the axilla or in the fissure between the buttocks, they are almost insufferable. If near to the anus, there is danger that the swelling may terminate in fistula in ano.

The *causes* are various. They may be induced by exposure to cold, but more frequently by a disordered state of the digestive organs. The latter cause is manifest in all those cases in which boils are perpetually recurring for months in succession. High living, so often charged with setting up the tendency to this affection of the surface, acts by the deteriorating influence it gradually exerts on the entire digestive apparatus.

The Treatment.—Many domestic remedies are in use, all having reference to their local action; such as bread and milk poultice, a mixture of soap and sugar, the hop and the chamomile poultice. These are always good applications, and may be frequently renewed. But if there be a tendency in the system to repeat the disease again and again, something more must be attempted than the use of external appliances. It will be necessary to correct the condition of the system, by the exhibition of small doses of calomel or the hyd. cum creta. One, two, or three grains of the latter may be given two or three times a-day, to children from two to eight years old. This alterative treatment may be preceded if the stomach and bowels are deranged, by the administration of a cathartic dose of calomel and jalap, and the patient should be restricted to a very light diet.

In children of a scrofulous habit, it will be necessary to administer a solution of the hydriodate of potash, if the disease persist. A scruple may be dissolved in three ounces of water, of which mixture a child five years old may take a teaspoonful twice a-day.

After the suppurating process has commenced, one of the poultices named should be constantly applied until the slough has been thrown off, and subsequently no application will be more agreeable or proper than soft flannel frequently soaked in hot water; and this should be continued until the surface is completely healed.

CHILBLAINS.

These are sources of much discomfort, and the more so because of the liability of parts once under their influence to have all the morbid phenomena renewed every winter.

It was long ago ascertained that external cold, like external heat, was capable of setting up inflammation and vesication to such a degree as to kill the part so acted on, the results depending on the suddenness and intensity of the application of either. The primary effect of cold is to arrest the capillary circulation, and the continuance of this state results in loss of sensation, or numbness, which is subsequently blended with itching, if the cold be not very intense nor long applied. Experience has abundantly shown that these direct effects of cold can be met most effectually and safely by the application of snow, then of iced water, then cold water without ice, and subsequently with water gradually elevated in temperature. Were this care observed immediately after exposure to severe cold, it would rarely be necessary to call for medical aid afterwards.

If the case be imprudently managed on a plan directly the reverse of that just named, viz., by warm appliances of various kinds, violent reaction will ensue; and even the death of the parts may follow, or at any rate abscesses may be formed which will be very troublesome.

When the frost-bitten parts give tokens of a return of former uneasiness as winter approaches, I know of no method so simple and efficient as friction of the parts at bedtime, and early in the morning, with snow or very cold water. Some persons find relief from bathing with very hot water, and it is quite easy to make trial of either.

Various stimulant applications have been suggested, as the common soap liniment, opodeldoc, tincture of cayenne pepper, laudanum and the like; and all may sometimes afford relief. Hot water holding in solution some chloride of lime and well rubbed into the surface is also spoken of with commendation.

In a very severe winter many years ago, nearly all the inmates of the Philadelphia Orphans' Asylum suffered from chilblains or frost-bites, and the most effectual remedy then employed was copaiba. The parts were thoroughly cleansed with soap-suds and dried, after which they were anointed with the copaiba night and morning.

When ulcers are formed and the disease proves very obstinate, owing perhaps to a scrofulous taint in the system, it is well to blister the part and apply to the raw surface a weak iodine ointment, gradually increasing the proportion of iodine as the patient can bear it.

WARTS AND CORNS.

It is unnecessary to describe a wart, as every one is sufficiently informed on this point. It has been well defined a hypertrophied state of the true skin, with thickening of the epidermis, and its most frequent location is on the hands, fingers, &c. I have never seen a true wart on the face or neck, although some writers mention those localities.

That age has something to do with these excrescences is probable, from the fact that we rarely see them after the full development of puberty. From early childhood to actual puberty, we meet with them as a very frequent occurrence. Warts are very seldom a source of pain or other discomfort. They are unsightly, especially on the fingers of a fair lass, and show badly when they are displayed at the piano. As they are most assuredly of no kind of advantage, the sooner they are parted with the better.

The coming and going of warts is sometimes a little marvelous, and especially the latter. I have known them to disappear with so much suddenness that no recollection could be traced out to mark the date of their evanescence.

The *treatment* is easy and promptly successful. I do not, of course, refer to the various superstitious devices common among the vulgar, but to actual medical management. It matters not what shape or form the wart may present, nor where it may be located, so far as the efficacy of the remedy is concerned. The undiluted nitric acid, or the nitrate of silver will meet the case completely. Some have advised to pare off the crust or apex of the wart with a sharp knife, and then to apply the acid or the lunar caustic. But this expedient is by no means necessary, and, moreover, it greatly augments the pain. If one application fail, make another at the end of a week, and the wart will vanish.

Coley affirms that holding the wart under a stream of cold water until the skin becomes quite cold and is almost insensible will effect its removal. The long continuance of the cold is believed to stop the circulation in the minute vessels that nourish the wart, and so to destroy its vitality.

Corns are vastly more annoying than warts, because of their locality. They encounter not only the pressure of tight shoes, but also the weight of the body, and hence it is that locomotion gives so much distress.

These excrescences are something like warts, though not precisely the same thing. They consist of thickening and induration of the epidermis, and the crust becomes often as dense as horn.

The *causes* are well understood, though too seldom practically appreciated. They result, perhaps in every instance, from undue pressure on some part of the feet, induced by shoes either too tight or too loose. A very tight shoe will unavoidably make morbid pressure, and a shoe too large in some parts, yet too small elsewhere, may exert a like influence. That these are efficient and common causes is plain, from the fact that those who wear shoes made on their own lasts, fitted to the precise form of their feet, are exempt from corns. Another decisive, though negative proof is found in the fact that confinement to bed by long-continued sickness is sure to rid the feet of this unpleasant incumbrance.

The *treatment* very naturally suggests itself from the hints just thrown out. Unequal pressure must be avoided by having shoes to fit accurately. It is far better for children to wear shoes a little over size than under. And to save the corns from being very much aggravated by pressure, it is wise to protect them by a device now to be named. Procure some sheepskin coated with good adhesive plaster. Apply a piece to the site of the corn, varying in size from a twenty-five cent to a fifty cent piece, first making a hole in the centre as large as the excrescence. Having warmed this, lay it on the spot, follow it with another piece rather smaller, and with a central hole a little less than that in the first piece, and then add another and another piece, if need be. This contrivance will completely protect the corn from undue pressure, and by perseverance in it the trouble will soon cease.

The practice of cutting corns very closely with a sharp knife is hazardous. A merchant of this city many years ago lost his life in this way, by inducing a fatal tetanus. The most that can safely be done in the use of a knife is to separate the horny crust, and this can be effected by the fingers as well. This being accomplished, the surface may be touched with nitric acid or with lunar caustic once a-week. I have known the application of spirits of turpentine every night for several weeks to eradicate corns of long standing. The strongest tincture of iodine is also employed with success.

OZÆNA.

A VERY viscid and quite offensive discharge from the nostrils is characteristic of this disease. It is seated either in the mucous membrane lining the nose or in the bones of the nose. If the former be exclusively the seat, a close inspection will detect ulceration, and this state of things may be of long standing without altering the external appearance. If the disease extend to the bones of the nose, the integuments are apt to be implicated, and redness, with swelling, are very obvious.

The *causes* are most probably to be found in a scrofulous or a syphilitic taint, which predisposes the parts to be inflamed and ulcerated from very slight exciting causes. The scrofulous form of ozæna very seldom appears earlier than the fifth or sixth year, and we are generally certified of the presence of this diathesis, by tokens of it in other parts of the economy.

The venereal variety may occur at an earlier period, as syphilis is often a congenital disease. In these cases, the ozæna will not be alone, but will have as companions excoriations and ulcerations about the anus, and cutaneous eruptions.

The effect of ozæna on the voice is often quite observable. The viscidity of the discharge blocks up the nostrils, so as to interfere, very manifestly, with the power of pronunciation.

The *treatment* of the scrofulous variety of ozæna invariably calls for iodine. If there be costiveness, it must be removed by repeated doses of cremor tartar and jalap, taken in syrup or sweetened water. A child ten years old may take five grains of jalap and ten of cremor tartar every other day, or oftener, if need be. In the intervals, a weak solution of the hydriodate of potash should be administered, or three drops of tincture of iodine, twice a-day, or a half teaspoonful of cod-liver oil.

As a local application, the lunar caustic will often be highly beneficial, after the surface has been cleansed with warm water. Some physicians employ a mixture of a drachm of tincture of myrrh and half an ounce of lime water, on lint, which is passed up the nostrils twice a-day. A much more efficient mixture is as follows:—

℞.—Chlor. calc. ʒii;
Ext. rhatan. ʒiss;
Aquæ ℥ij.

Mix the articles well, and inject half an ounce up the nostrils three times a-day. The disinfectant quality of the mixture arrests the fœtor, while the astringency of the rhatany corrects the state of the membrane.

The syphilitic variety calls for small doses of calomel or hyd. cum creta every day, for a week or ten days. If there be a scrofulous taint superadded, the protiodide of mercury must be administered, in doses of a twentieth of a grain, for children six years of age. The cod-liver oil may be administered daily.

URTICARIA, OR NETTLE RASH.

This is often a troublesome, though rarely a dangerous disease. It is easily recognized by large welts, or raised ridges, nearly white, and surrounded by a light pink tinge, reaching to a considerable distance. The *febrile* nettle rash and the *evanescent* form are the varieties usually seen; and all children, as well as some older persons, are liable to their attacks.

The febrile variety is always ushered in by fever of a remittent type, which may last two or three days, and is generally accompanied by more or less headache, sick stomach, and a feeling of oppression. These disappear almost entirely on the coming out of the rash; but a teasing itching remains, which is much aggravated by exposure to heat. Sometimes the local affection and the fever appear and vanish twice or thrice in the course of a week.

The *causes* are properly referred to some error in the digestive apparatus; to suddenly suppressed perspiration, the more especially after the body has been unduly heated. Sundry articles of food, although agreeable to most persons, seem to have the power of setting up this rash in certain individuals, in virtue of idiosyncrasy, or something else.

The Treatment.—A mild emetic given very early may put a stop to the affection or prevent its development. This is always to be resorted to when offending articles have been eaten a short time previous to the seizure. A few grains of ipecacuanha will answer the end. Not only will the stomach be relieved of its irritating contents, but the skin will be covered with perspiration, as a consequence of the nausea induced. Sometimes a smart saline cathartic will answer as well, especially if half a grain of tartar emetic be added. If the skin be not sufficiently moistened, let a Seidlitz powder be given every two or three hours, to which add five drops or more of antimonial wine, for children between five and ten years old.

The *evanescent* form of this rash is declared by some to be a chronic disease; by which I suppose it is meant that the system is predisposed to attacks from very feeble causes, and that actual fever is rarely present. I know very well that some individuals, in middle life, are very apt to have the rash, if they partake of certain articles of food, already alluded to in the case of children. Thus onions, cucumbers, mushrooms, the muscle, and some other articles held to be edible by the community at large, will invariably give rise to this skin development in some persons.

Here the treatment is manifestly preventive, consisting in the careful avoidance of all the exciting causes. The warm bath and sea-bathing, and an occasional emetic, may be advisable; and if the patient be at all scrofulous, it will be indispensable to administer some preparation of iodine.

ROSEOLA, OR ROSE RASH.

We name this merely because it is spoken of by mothers and our advice solicited in the case. Several varieties are pointed out, but the only one which calls for any sort of treatment is the vaccine rash that accompanies the decline of the cow-pox. In some cases, the inflammation and hardness of the skin are intense, and the color is nearly purple. The best remedy is said to be mercurial ointment, thinly spread on a linen rag. But it will frequently be quite as salutary and equally successful to cover the parts with cloths repeatedly dipped in warm water holding chloride of lime in solution. If the stomach or bowels be at all deranged, an emetic or cathartic should be administered, and very light diet enjoined.

The *pathology* is involved in much uncertainty. If, as some allege, there be an inflammatory form, cured by bleeding or accidental hemorrhage, and a variety caused by debility and made worse by bleeding, then the pathology cannot be settled very easily.

We are of opinion that in a vast majority of cases the disease is essentially associated with and dependent on debility and depravity of the whole system, and especially of the blood. Its near relation to scrofula is too palpable to be overlooked by a careful observer. Defective nutrition is the grand secret that brings about the morbid result. The fact that this disease is really hereditary, passing down through several generations, is additional proof that the blood is at fault most deeply.

The *treatment* consists in the use of acids, tonics, and a mixed animal and vegetable diet, all calculated to revivify the blood, and infuse tone into the entire system. The good effects of this treatment will be augmented by the previous exhibition of small portions of calomel and jalap, as mentioned previously, with a view to correct the state of the digestive organs. The patient should take, four or five times a-day, a teaspoonful of the following mixture:—

℞.—Quin. di. sulph. ℈i;
Aquæ ℥ij;
Acid sulph. aromat. gtt. x.

The dose named will suit a child five or six years old. Lemonade may be drunk freely; and, as a substitute, ten drops of elixir of vitrol may be added to a half-pint tumbler of cool water.

The discharges from the bowels must be corrected by repeating the cathartic dose of calomel and jalap; at first they will be bloody, or tinged with blood, but under the use of the remedies named, they will improve in appearance very perceptibly. Perseverance in the treatment will put a stop to the local bleedings, and the general health will be invigorated. Very many prescriptions have been made for this disease, but I know of no real improvement of the practice detailed above, excepting the exhibition of small portions of the iodide of iron, in scrofulous and feeble subjects, and the employment of sea-bathing.

PURPURA, THE PURPLES.

CHILDREN are liable to three varieties of this cutaneous affection, the *simple*, *hemorrhagic*, and *nettle rash* species, the first and last being much less difficult to control than the second.

The first is seen on the feet and legs of children, who have what is called a sallow, sickly look, and it consists of numerous purple spots, which if scratched readily bleed. The treatment is made up of a suitable cathartic dose to clean out the alimentary canal, and the free administration of acid drinks, as lemonade. A few grains of calomel and jalap will meet the first indication, and, if desirable, the dose may be repeated. The acid probably acts as a gentle tonic to the entire system.

In the *hemorrhagic* variety, the spots are much larger, and are blended with stripes and patches of a dark color. The legs, thighs, arms, backs of the hands, and the trunk are all exposed to this affection. At first, the spots may be of a scarlet hue, but this is soon succeeded by a purple or livid dye. On subsiding, the spots become brown, or greenish, or of a yellow cast, and at length the tinge is lost. In some cases, we find vesicles which contain black blood. The state of the blood is so depraved occasionally that very slight pressure will leave a black or purple mark, and copious discharges of blood take place from the bowels, kidneys, or nose, which prove fatal. The slightest scratch is followed by copious bleeding. The gums, eyelids, mouth, lips, &c., pour out black blood under the slightest irritation.

For the most part, this disease is preceded by debility, great lassitude and muscular pains. The pulse, after very little exertion, is found to be very weak. As the disease progresses, the debility increases, emaciation and general loss of tone ensue. When death follows hemorrhage, it is so very copious as to kill in a few minutes.

The nettle rash variety of the purples was so named because of a resemblance to the ordinary nettle rash. It appears on the arms, legs, and breasts of children, in round red spots, which itch and lead to scratching. The spots are somewhat like the *Dutch hives* sometimes mentioned by the old ladies. These eruptions appear in successive crops, and leave marks behind them, which remain for a longer or shorter period. The disease may continue three or five weeks. It is found only in those children who are fed on diet that is crude and defective in nutritious qualities, or in such as have labored for weeks under disordered bowels.

The *treatment* is to be conducted on the principles already laid down in respect of the hemorrhagic variety.

ERYTHEMA.

This disease consists of a blush or red tinge over a large portion of the surface, accompanied and induced by a disordered state of the constitution. I am satisfied that the local affection is always symptomatic.

The *causes* are all agencies calculated to impair constitutional vigor, and especially such as exert a deteriorating influence. Bad clothing, bad feeding, confinement in factories and the like operate on the system of young children gradually, and so give rise to this affection.

Several varieties are named by writers on cutaneous diseases, but they do not differ materially in respect of the mode of cure.

The *treatment* always demands a rectification of the digestive organs, in the first place. Subsequently, gentle saline laxatives will be proper occasionally. If the patient be feeble, it will be needful to administer tonics and vegetable acids. If there be indications of a scrofulous diathesis, the use of iodine or cod-liver oil will be indicated.

The local applications are various. Warm water applied by means of soft flannel or linen often suits best. Some persons are relieved more certainly by cold water, and evaporating lotions. Carded cotton, flour dusted on the parts, or cod-liver oil applied so as to exclude the air entirely, may be tried alternately.

If there be ulcerations, as often happens, it will be necessary to apply bread and milk or carrot poultices, and subsequently to dress with strips of adhesive plaster, over which we may make any of the local appliances before named.

It is a vain thing to expect, as some do, that these local diseases can be cured by the most assiduous application of local remedies. In fact, it has happened frequently that the disease has vanished under general treatment alone; and it is certain that we cannot effectually control it apart from the use of constitutional means.

SCABIES, PSORA, OR ITCH.

VARIOUS names have been given to this affection, based on peculiar circumstances, which do not, however, alter the real nature of the disease. The *miliary itch*, the *canine itch*, the *pustular itch* are spoken of, but they present no specific differences that call for special attention.

The origin of *scabies*, *psora*, or *itch* is involved, like that of all other cutaneous affections, in some obscurity. The question may be fitly propounded, Are not all these affections of a common origin? Are they not all induced, as a primary cause, by derangement of the digestive organs? Every one knows that a foul stomach will sometimes engender small ulcers in the gums, and coat the tongue with a whitish or yellowish fur. And we are of opinion, from the fact of extensive continuous sympathy between the skin and alimentary canal, that most of the morbid affections of the skin are traceable to derangement of the chylopoietic apparatus. That this oneness of origin should be followed by such apparent diversity of cutaneous disease, may seem inexplicable. But we all know how readily these diseases are converted into each other. For instance, erysipelas of long standing often passes into a common tetter, and the itch sometimes takes on a character purely herpetic. The frequent occurrence of these changes forces the conviction that, however diversified the cutaneous diseases named in the books may be, they have a common source; in other words, the disease of the skin is an unit.

Why should it astonish us to see diversity of cutaneous disease resulting from derangement of the digestive organs, when we know that from the same source we have a great variety of other affections? The condition of the skin is not always the same, any more than the state of the digestive apparatus; and the changes that constantly transpire, though not cognizable by our senses, may be sufficiently real and marked, to lay the foundation for diversified results.

A want of cleanliness is usually assigned as the principal cause of itch, and we concede that it tends to lay a foundation which, in connection with the internal derangement, may establish the disease. The itch has also been attributed to the presence of an insect, the *acarus scabiei* or *sarcoptes*, but the evidence of its existence is not universally admitted. The partisans of this theory explain by it the propagation of the disease to others as well as the almost unlimited renewal of it in the same individual. Certain it is that the disease is communicable by cohabitation, but not universally. We incline to the belief that the failure to spread in a community, the fact of vast numbers being exempt, is to be ascribed to the absence of that derangement of the chylopoietic viscera, on which we believe the disease depends for existence as well as propagation.

This disease spreads over all parts of the body, excepting the face. Now, every one knows that the face is the only part uncovered during the time of sleep. By its uniform exposure, the exhalations by transpiration are carried off effectually; and the tender surface is thus, no doubt, preserved. The covering on the other parts causes the evolved matters to accumulate on the skin, and the morbific operation is thus concentrated. Why the itch should always appear first on the fingers and wrists is not to be explained, except by the fact that the disease is communicated by the shaking of hands to persons predisposed by a deranged state of the digestive organs. That all who shake hands with a person laboring under psora do not get the disease is very certain, and there must be some adequate reason for the exceptions.

The itching which characterizes the disease is always increased when the patient is in bed, or exposed to the heat of a fire. This may result from the increased action of the cutaneous exhalants, which will, of course, cause a more concentrated action on the surface. At all events, such are the facts of the case.

The itch is not attended with dangerous consequences, unless improperly treated. It may pass into herpes or be repelled, and give rise to fevers, internal inflammation and dropsy.

The disease usually consists of little pustules, hard at their bases, the summits presenting transparent vesicles, attended with intense itching. By constant scratching, the pustules may degenerate into sores, as we often witness; and by neglect of cleanliness and proper remedies, it may pass into various shades of herpetic disease, as we have before intimated.

The *treatment* of this disease divides itself into the constitutional and local. The sooner it is eradicated the better, for by long continuance, it becomes the more inveterate, and is then, especially, prone to pass into a worse form of cutaneous disease. Notwithstanding the failure to recognize constitutional derangement, few authors omit the use of such articles as have a tendency to correct general derangement of the digestive organs. I believe that the cure of these cases would be much accelerated by attending to this circumstance, and by first cleansing the stomach and bowels effectually. So great is the sympathy between the liver and skin, that I would utterly despair of curing itch in a patient laboring under hepatic derangement. Cure the latter, and you put the cutaneous surface in such a condition as will favor the salutary action of local means.

Generally speaking, it will be proper to give the patient an active emetic of tartarized antimony, or calomel and ipecacuanha; to keep the bowels freely evacuated by Epsom salts, or a mixture of equal parts of the flowers of sulphur and cremor tartar, rubbed with molasses, of which a child five years old may take a teaspoonful five or six times a-day. Sometimes it may be necessary to precede this treatment by the abstraction of blood, as when the patient is of a full habit. This will favor the action of other means. The diet should be of the lightest and least irritating quality. Bread and milk, or mush and milk is the very thing. All stimulant drinks and food should be carefully avoided, and the use of the warm bath, and every other means of cleanliness should be carefully attended to.

Dr. Porter, of Hunterdon, New Jersey, states, in the *New York Med. Repos.*, N. S., vol. 6, that he cured the itch, after all other remedies failed, by giving his patients from five to thirty drops of spirits turpentine, daily, for about two weeks, by the end of which period the disease vanished. This remedy acted partly by increasing, and in part by altering the cutaneous perspiration, as well as the urinary discharge.

Very many local applications have been devised for the cure of itch. Some years ago, when attending the *Children's Asylum* of Philadelphia, where over a hundred children had the disease, I had the best success from the decoction of poke root. The sulphur ointment had been employed very liberally, and although it seemed for a time to check the disease, it was apt to return. It interferes too much with that cleanly state of the surface which I hold to be eminently important. I directed a large tub to be nearly filled with the strong decoction of the poke, made by boiling the roots in water, the bath to be employed as warm as it could be borne. Each child was placed in the bath and well washed from head to foot. The application occasioned severe pain in some, who had excoriated the parts by scratching, but it seldom required more than one trial. It was necessary, however, to shut all the children thus treated in a room by themselves, and to serve others in the same way, in order to prevent contact with those not so managed, until the remedy was universally applied. In connection with the general treatment named, this local application, I repeat, has been more successful in my hands than any other. That some may apprehend metastasis to result from the use of the bath, I am aware. I dreaded it myself, but never witnessed anything of the kind.

After the disease has ceased, whether by these or other means, it is needful to continue the cathartic medicines, and to observe constant cleanliness, frequent change of linen, to use the warm bath, and to avoid all irritating diet and drinks.

The black oxide of manganese has been well spoken of as a remedy. It was found that operatives who went into the mines where manganese was worked, with the itch on their persons, were speedily cured. The inference was that the manganese dust acted a salutary part, by being blended with the perspiration. This led to the use of the powder, and also the ointment of manganese.

The *Sanguinaria Canadensis*, or blood root, is highly commended by some physicians. It may be applied in a watery or acetic solution; a half ounce to six ounces of vinegar is the proper proportion. I have never tried it.

As most patients have a partiality for the more pleasant remedies, I name the *infusion of peppermint* as a remedy highly praised by M. Astier, who employed it as a lotion in the Military Hospital of Alexandria. He made the infusion very strong, and declares that it cured the disease in a fortnight. Doubtless, however, the prevailing custom of giving some cathartic medicine was not overlooked.

The *chlorides* have had remarkable success in the treatment of *psora*. The chloride of lime has been chiefly employed. The manner of using it is as follows:—For adults, a lotion is made by adding from an ounce to an ounce and a half of the chloride to a pint of common water; for children, an ounce or less of the chloride to a pint of water, will answer. The parts affected are to be washed with the lotion three or four times a-day, and on every third day the patient should have the benefit of a warm bath. The latter, besides its cleansing efficacy, soothes the irritation of the surface, arising partly from the disease and partly from the action of the chloride. Professor Fantonetti, of the University of Paris, declares that in nearly every case of psora thus treated, a cure was effected in a week; and he recommends it as the most prompt and economical mode of treatment. Some have employed a much stronger lotion, made by adding three ounces of the chloride to a pint of water; but it will answer, generally, when weaker. It is also affirmed that the aqueous chlorine, or chlorine water, cures the disease more effectually than the chloride.

Touching the modus operandi of the chlorine and chlorides, there is no settled opinion. I believe that besides their tendency to preserve cleanliness, the chlorine acts as a decomposer of the perspirable matter exhaled, and tends to keep up the cutaneous irritation. That it can act in any other way is hardly probable.

Mercurial ointment, citrin ointment, lotions of corrosive sublimate, solutions of the hydrosulphurets, and many other articles have been applied externally, but I regard them as inferior to some of those of which we have spoken in detail.

The external use of lard, castor oil and other oils, has been resorted to with the expectation of destroying the insect supposed to induce this disease. The surface is coated thickly with the oleaginous matter, and thus the respiratory function of the insect is annihilated. Whatever the theory be worth, the fact is undoubted that itch has been cured by these means.

It should be borne in mind that a long-continued itch, especially in old persons, ought not to be hastily removed, unless care be taken to establish an artificial drain at the same time by means of setons or issues. This remark is applicable to all old eruptions in aged persons. If the cutaneous disease be suddenly repelled in younger persons, and internal inflammations supervene, blisters should be applied to the anus and wrists, and blood should be drawn both generally and topically, according to circumstances. It is also necessary to maintain a free action of the bowels.

HERPETIC AFFECTIONS.

These are various, being called by some *tetter*, *salt rheum*, &c. They embrace a great diversity of cutaneous irritations, convertible into each other, and no doubt of a common origin. Such is my opinion.

It has been well remarked by Coster "that the almost infinite variety of forms assumed by chronic affections of the skin does not prove an equal variety in the nature of these affections. Pimples, vesicles, scabs, thickening of the skin, indurations of the cellular tissue, enlargement of the bulbs of the hair, all must be regarded as products of an exaltation or excess of vital action in the cutaneous surface. This is clear from the fact that diverse alterations take place under the influence of the ordinary irritating agents, which give birth sometimes to one form of disease, and sometimes to another; and that certain forms, evidently inflammatory, such as erysipelas, are observed to degenerate into tetter, and *vice versâ*. It is also proved by the circumstance of an internal inflammation changing frequently into an affection of the skin, and reciprocally, according to the intensity of action in the cause, and to the predisposition for one kind of inflammation rather than another. The variety in the products of inflammation is easily explained; the excess of vital force in a part for the time being draws the fluids thither, producing a sort of congestion; if there be an afflux of blood, we have inflammation; if of sebaceous humors, we have the scales of tetter and the like; if the afflux be of lymph, we have lymphatic engorgement. Thus it happens that the same cause produces different effects, dependent on the kind of tissue involved, the peculiarity of constitution, the predominance of certain fluids, and the change effected in them by irritation. We are not obliged, therefore, to resort to the idea of specific maladies to account for the diversity of form in these affections, since this is not more surprising when seen externally than when it appears internally."

From the views thus quoted, and which we cordially approve, it will readily occur that the principle of treatment must be essentially the same for all cutaneous diseases. And as herpetic affections may and do pass into other forms of disease of the skin, we shall discover that the remedies proper in the one case are often equally so in the other.

If we were to enter systematically, as some authors have done, into the investigation of this subject, it would consume a large portion of our time. This course is not necessary, and we shall not pursue it. What is usually understood by herpetic disease, tetter, and the like, is a pustular subacute inflammation of the skin, with some redness, heat, and itching. The pustules are sometimes so small as scarcely to be recognized, yet, on bursting and drying, they give rise to scabs of various kinds, or to ulcerations, according as the irritation whence they result is superficial or profound, intense or light, or as they predominate in certain tissues of the skin, which are so many circumstances necessarily leading to diversity in the nature and quantity of these morbid secretions. I know persons who for years were subject to attacks of erysipelas, but who, as they advanced in years, ceased to be troubled with that disease, but in lieu thereof had frequent visits of herpetic disease on the hands and face. Here the original disease simply changed its form, but did not disappear. We often meet with individuals in whom a scratch will lay the foundation of a sore, while others would pay no attention to the original injury. Here is apparent a diversity in cutaneous sensibility and irritability. Now the former are much more liable to herpetic attacks than the latter; they present systems predisposed to such affections.

Several varieties of herpetic disease are cognizable. That which has the least degree of inflammation connected with it is the *herpes farinosa* or *furfuraceous*, tetter (*furfuraceous* means *brawny* or *scaly*); if it be irritated, it changes into the *squamous* tetter; this, by increased irritation, passes into the *pustular* tetter, attended with redness, and this again may run into the *corroding* herpes, which is held to be the highest degree of herpetic inflammation. These varieties depend somewhat on the seat of the disease, in many cases; thus it is often dry on the back and hands; crusty, brawny, or furfuraceous on the chin; red and inflammatory on the cheeks, &c. &c. In short, all kinds of inflammation of the skin may take on the herpetic form, and herpetic disease may also be transformed into any sort of inflammation, either external or internal. How far these facts go to confirm the once popular doctrine of the unity of disease is not for me now to discuss, but the subject is worthy of investigation.

Herpes being obviously a cutaneous inflammation or sub-inflammation, it follows that it may be produced by all the stimulating or irritating agents that act on the skin, and have the power of engendering other kinds of inflammation. All we have to do is to recognize a predisposition or a peculiar irritability, which evolves this form of cutaneous disease rather than another. Those who are held to be thus predisposed are persons of light complexion, with a delicate skin, of a lymphatic, scrofulous, scorbutic, or phthisical constitution. In all such, the occasional or exciting causes are the application of irritants to the skin, insolation, want of cleanliness, dampness, blisters, frequent boils and erysipelas, derangement of the chylopoietic viscera, mental excitement of great intensity, suppression of periodical discharges, violent exercise, &c. &c. Herpes may follow small-pox, measles, scarlet fever, in short, all the irritations to which the skin is liable.

Of the Symptoms of Tetter.—These are of course various. Some persons have no sign of tetter until cold weather sets in, and then the disease appears or is revived. After an itching more or less troublesome, with some tumefaction resembling that of erysipelas and upon a limited surface, there is an eruption, sometimes, but not always, pustular; the pustules are very small, either distinct or confluent, allowing the escape of serous fluid, which gradually concretes into dry or humid crusts varying in depth and extent. Sometimes a scab covers an ulcer of greater or less depth, or the ulcer remains open, is red and obstinate, tending more and more to invade the neighboring parts. Hence the name of furfuraceous, squamous, crustaceous, pustular tetter, &c. &c. Some persons never have any other form of herpetic disease than that which is often called ringworm, but which is more troublesome than the common ringworm, interfering exceedingly with the process of shaving. A little pimple is the beginning; that is scratched, and the fluid discharge irritates the adjacent skin, and the disease spreads to the size of an inch in diameter; the surface is cracked and irregular, and apt to bleed if picked with the nail. Others are attacked only in the palm of the hand, or about the knuckles or end of the fingers. There is some swelling, the skin cracks, and the fissures often bleed; the surrounding parts itch, and the finger cannot be bent often without difficulty. Towards spring, the parts heal and the skin scales off.

Besides these, we might enumerate many other varieties, to which authors have assigned names in abundance; but we think it needless to enumerate them, as they are not of any real value, and are not based on any difference of morbid action. Though herpetic affections often return periodically, they are sometimes chronic in their nature. They may be superseded by internal diseases more or less grave, resulting from metastasis, or, as some say, from the striking in of the cutaneous affection.

The probability of curing all these morbid conditions depends very much on the age of the patient. Infants are most readily cured. Adult cases are very obstinate, and in very old persons it is either unsafe to attempt a cure, or it is next to a hopeless undertaking. In women, the prospect of cure is less favorable than in men, when it appears at the time of the cessation of the menstrual discharge. Scrofula and a bilious habit are unfavorable to the cure of herpes, though the latter is more easily managed than the former. If the cutaneous disease follow an old internal disease, we either cannot cure it, or, if we succeed, we reproduce the internal malady.

The *treatment* of these affections is various. In quite recent brawny or scaly tetter, correcting the digestive organs, using the warm bath, and employing mild sudorific drinks, as the herb teas, with sweet spirits of nitre are often sufficient. If the tetter be red and and painful, we must calm the irritation by mild emollient applications, fomentations, and the like, as soft bread and milk poultices, chamomile poultices, &c.; add to these a light and vegetable diet, general bloodletting, if necessary to reduce arterial excitement, and local depletion around the diseased part by means of leeches. If the patient has been subject to an evacuation of any kind, that must be re-established, or a seton applied somewhere, to form an artificial drain.

Every precaution must be observed in order to calm the irritation both external and internal, and to further this end yet more, fresh vegetables, cooked fruits, milk, &c., must be the chief articles of diet. All salt provisions, savory articles, rich dishes, and alcoholic drinks of every form must be banished, on account of their tendency to irritate the digestive organs. To such a course, the disease will usually yield. It is exceedingly difficult to prevail on persons whose general health seems to be good, to abstain in this way for the sake of a trifling disease of the skin.

I have several times cured that form of herpes that affects the fingers and hand, by covering the whole surface with adhesive plaster. This effectually protects it from external agents that would irritate; and the healing process goes on very happily.

In most cases where the surface is affected to a considerable extent, benefit will result from the occasional use of a mild cathartic, and the continued employment of mild sudorifics, as slippery elm, balm infusions, with nitrate of potash, or sweet spirit of nitre, or spirit of mindererus.

I have known herpetic affections of the hands, accompanied with a similar condition of the eyelids, and to some extent the eyes also. These are obstinate cases very frequently. I have cured them, after fruitless efforts with the blue pill and other means, by adopting a mode recommended first by Thwaites, in respect of Fowler's solution of arsenic. He advised to begin with three drops three times a-day, and increase a drop each day for a week; to discontinue it for a few days and then repeat the remedy. This is the plan for an adult. In addition to this, I applied a blister to the nape of the neck, and kept up a discharge for some weeks. I made use of a weak solution of nitrate of silver to the eye, kept the bowels in an open state, and enjoined a mild diet. The hand and eyes were cured in a few weeks, and I believe that in all herpetic affections of this sort, especially in a scrofulous habit, this mode will be successful, especially if aided by some preparation of iodine.

Among the domestic remedies for tetter, I recollect to have heard the vinegar taken from a jar of pickled walnuts, highly lauded; also tobacco leaves, moistened with vinegar. These, however, must be received with caution, only to be resorted to in cases where all ordinary means fail. The internal and external use of iodine will often be advantageous, especially if there be a scrofulous taint in the case. The ioduretted hydriodate of potash internally and externally is the preferable mode of exhibition. The mixture is that usually called Lugol's solution.

Many cases of chronic herpetic disease have been effectually cured by the sulphur vapor bath, aided by internal medicines to act on the bowels and skin. The lotions of the hydrosulphuret and chloride of lime, and the liquid chloride of soda have all been successful, also the lotion of sanguinaria Canadensis in vinegar, as advised for the itch, and likewise the inspissated juice of the fresh leaves of the poke bush. Some practitioners employ mercurial ointment, citrin ointment, &c., and the nostrums in use are almost without number. A strong solution of tan has sometimes cured tetter of long standing. The nitrate of silver is also resorted to as a counter-irritant, and on the same principle, a blister is applied over the entire diseased surface.

The internal and external use of the *solanum dulcamara* has been successful in some cases, as follows:—

Take an ounce of the stalks of the dulcamara, water a pint and a half. Boil to a pint, and strain. The dose is two ounces, morning, noon and night, gradually increasing to a pint per day. At the same time, wash the parts with a strong decoction of the same plant. In short, almost everything has had the credit of curing, and nearly everything has sometimes failed to do any permanent good.

Agreeably to Willan and others, the different forms of impetigo, which includes everything called tetter, are neither contagious nor communicable by inoculation.

TINEA CAPITIS, OR SCALD HEAD.

I NAME these titles because the most common in use. Yet the term *tinea* literally denotes nothing that can shed a ray of light on the nature of the disease. It comes from the Latin for *to hold.* It may indicate the tenacious or adherent quality or chronic form of the affection, but nothing more. Willan prefers *porrigo.* He says it is derived from *porrum,* which points to the odor of the scab and exudation in the disease, which has been compared to the smell of the leek. I care very little which term be employed since they are both arbitrary, and not characteristic in any sense. All forms of tinea or porrigo are in relation to the scalp and other parts of the head what ordinary herpes is to the rest of the body. We can discover no essential or important difference between them. In all the cases of what is generally called tinea, there is a pustular inflammation, and the vesicles formed allow the escape of matter and give rise to an ulceration, that is covered with crusts of various forms.

This disease rarely affects infants; more commonly we see it in children of from three to ten years old, and occasionally in adults. It is more frequent in females than in males. Sometimes the disease is of small extent, but frequently it involves the entire scalp, and occasionally encroaches on the forehead, temple and cheeks. As it is from time to time renewed, the succeeding scabby incrustation is augmented, and often made soft by the exuding viscid fluid. In a short time, however, the scabs become superficially dry and pulverulent, easily separable, and quickly reproduced. Hence considerable portions of them are daily brought away in attempts to comb the hair. The complaint is attended with great itching and tenderness of the scalp. If either the tops of the small pustules or portions of the incrustation be detached by scratching or combing the head, it gives the patient very severe pain. It weakens the hair, causes it to be thinned very much, and sometimes alters its color. In this respect, it differs from the common *dandruff* or *pityriasis* of the books, which latter is always superficial, does not detach the hair, nor change its color ; indeed, the dandruff is generally nothing more than a mere scurf.

When the scalp is hot and red, and there is great exudation, we may note it as an inflammatory case; if the crusts be thinly scattered and furfuraceous or scaly, the irritation is not serious.

There have been various causes assigned for this disease, and among them, it is not unusual to hear the lower classes account for it by the dropping of the salt and oily fluid of bacon on the head. But this is preposterous. Some have supposed it to be a disease purely local, and, as proof, tell us that it attacks persons in apparent good health. I believe that, in most cases, perhaps in every case, it is accompanied with more or less gastric and intestinal or hepatic derangement. Its great frequency in scrofulous habits shows that it flourishes best in a morbid soil.

This disease often affects persons who have inflamed eyelids and enlargement of the lymphatic glands. Herpes and tinea sometimes alternate in the same individual. There can be no doubt that want of cleanliness may produce it, and certainly it may be propagated and kept up by that neglect. Vermin in the head, atmospherical vicissitudes, and bad living are also among the exciting causes.

Tinea capitis is always rendered more obstinate by neglect, and it is seldom, if ever, known to cease spontaneously, except it be succeeded by some internal disease.

Of the Treatment.—Before any application is made to the scalp, the hair should be shaved off, and the scabs gently removed, by washing with warm water and soap. After this, various ointments are employed—as tar ointment, sulphur ointment, citrin, mercurial, red precipitate, &c. According to Willan, no ointment succeeds so well as that made with finely-powdered cocculus Indicus. This article was first employed for this purpose by Dr. Hume, of Edinburgh.

One part of the powdered berry is to be rubbed well with three parts of hog's lard, and the head is to be anointed with the ointment every morning and evening, and then covered with an oilskin cap, in order to keep the dressings moist and the ointment close to the scalp.

As the disease is apt to return after it has been apparently cured, the application of the ointment is directed by Hume to be continued for some time after the head is supposed to be well.

Dr. Hamilton, of Edinburgh, speaks in high terms of the ointment of the cocculus Indicus, and says it has had unparalleled success in the cases of tinea that have fallen under his notice.

As a general rule, however, it is proper to give some active cathartic medicine, or a compound of calomel and ipecacuanha, to operate as an emetic and cathartic, prior to the application of local remedies. If there be much heat of the head, it may be well to apply leeches around the parts affected, and emollient poultices will also be useful. The diet should be of the least irritating kind, and water should be the patient's drink.

In addition to the applications named, many others have been employed—as lotions of the hydrosulphurets, corrosive sublimate, the ioduretted hydriodate of potash, chloride of soda, decoction of poke root, sugar of lead, lunar caustic, sulphate of zinc, &c. Recently, I have seen a notice of this disease being cured by washing with an infusion of tar, made very strong.

In some obstinate cases, I have seen blisters applied over the scalp to induce a new action, but this is not necessary. If metastasis be feared, blisters, setons, or issues may be useful.

The following case is quoted to show that the disease may be cured, even when of long standing. Mrs. B., aged twenty-six, labored under the disease for nine or ten years. She had been treated for it several times, but without success. When her last physician examined the head it was covered with a thick crust, resembling the bark of an old tree. It was well washed with soap and water night and morning, and covered with an ointment composed of tar ointment mixed with a very little calomel. An oilskin cap was applied over the whole to retain the ointment on the scalp. At the same time, fearing to rely on external means, powders of the golden sulphuret of antimony and calomel were given every night and morning, occasionally interposing a cathartic once or twice a-week. In a few days the crust began to fall off, leaving the surface slightly inflamed. To this a portion of simple cerate, with some sugar of lead mixed with it, was applied with pleasing effect. In about four weeks the noxious incumbrance was gone and the hair began to grow again. The cure was permanent.

As a general rule, I believe the mild measures advised are the most suitable. I have never resorted to blistering, nor to the pitch cap which some apply, in order to tear the hairs out by the roots. After the use of soap and water, and poultices, if necessary, we will find the case relieved either by the ointment named, or by the chlorides, or decoction of poke-root, or the strong tan water. Some cases appear to yield more readily to ointments than to lotions, and *vice versâ*.

I have cured most obstinate scald head in children four or five years old, chiefly by the wash of chloride of soda. The patients had been variously treated by others, but were not benefited. After cleaning off the scalp by repeated poultices, I directed a lotion of two drachms of the liquid chloride of soda, and six ounces of water, to be rubbed into the scalp several times a-day, at the same time keeping the bowels freely moved. The improvement was rapid and complete. The local application not only promotes healthful action in the scalp, but cleanses it completely and removes fetor entirely.

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